



# Garden Cuttings

a bi-monthly magazine for the discerning gardener

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Managing Editor: TIM NORTH . . . .

Production Editor: KEVA NORTH

Editorial Office: C/o P.O. Box 279, EDGECLIFF, N.S.W. 2027 - Tel: (02) 326-1519

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## A NEW LOOK

This month 'Garden Cuttings' comes out in a new format. It may look the same on the outside, but you will find that it has more than doubled in size.

We have been moved to make this change for one reason. There is a very evident demand for articles of more substance than was at first envisaged, and for a wider coverage of particular subjects. In this issue, for example, we deal with the genus *Iris*, with several articles each contributed by a noted expert on the genus. We also take a look at water gardens - a major feature of many gardens, yet so often badly done.

We cannot, however, sustain a magazine of this size on a monthly basis. To attempt to do so would mean sacrificing quality, both in presentation and content. So from now on 'Garden Cuttings' will come out every **second** month, and each issue will be more than twice the size of the old monthly one.

There may be some who think we should have kept it on a monthly basis - it is difficult, if not impossible, to please everyone. We feel, however, that the larger magazine will represent better value and will give us more scope in presenting original material.

Contributions are always welcome. If you have a special interest, or specialised knowledge, perhaps of a particular genus or group of plants; if you know of an interesting garden, whether it be a historic one or a modern one; even if you have news of some small, out of the way, nursery that has unusual plants to offer, we would like to hear from you.

Our next issue, therefore, will come out early in April.

TIM NORTH

### PLEASE PASS IT ON . . .

If you have enjoyed reading this issue of 'Garden Cuttings' will you help us find more subscribers by passing it on to a friend who may be interested? Or write the name and address on the coupon on page 75, post it to us, and we will send them a **FREE INTRODUCTORY COPY**.

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## Erratum

A typographical error appeared in the feature 'A brief history of the Darwin Botanic Garden' on page 46 of our January issue.

The tenth line from the top should have read "In 1879 the then Government Resident, Edward Price, appointed . . ."

## Book Reviews

by Tim North

### **An Australian Gardener's Anthology**

*Edited by McPhee Gribble Publishers:*

*Published by Rigby;*

*Recommended retail price \$19.95*

I must confess to a weakness for anthologies. Being what I may call a brief bedtime reader (by that I mean that I normally manage no more than about ten pages before falling asleep) a good anthology provides a rich and varied menu all through the week, and one can quickly pick out whichever piece best suits the mood of the moment.

Is this a good anthology? It is, I think, quite a remarkable achievement to have produced an anthology at all, for our horticultural literature is neither extensive nor particularly memorable. We have no one, for example, with the literary skills of Addison and Pope, no one with the capacity of Loudon or the thunder of Robinson.

The editors, in their introductory note, say they have looked for interesting, evocative and amusing insights into the garden lives of past generations and into the garden fashions of the day; that they have also tried to present a range of solid practical advice which would be of use to gardeners in Australia to-day.

The pieces which they have selected are, on the whole, rather mundane; the emphasis is certainly on the solid practical advice rather than on literary content. There are no peaks among them, no one piece that one would want to go back to time and time again. But collectively they do present quite a fascinating chronicle of gardening practice and fashions from the earliest days of settlement to the present time.

The earliest is 'A Letter to his Brother', written in 1788 by George Worgan, surgeon on the 'Sirius', in which he describes the 'spots of ground that we have cultivated for gardens'. From there we move to William Wentworth in 'The Colonial Kitchen Garden', to Georgina Molloy's entertaining letter to Captain Mangles of 1835, Donald Macdonald in 'A Melbourne Garden' in 1886 (one of the few pieces with obvious literary merit), Mrs Rolf Boldrewood's 'A Flower Gardener's Calendar' of 1892, a snippet from Donald Horne's 'The Education of Young Donald' in which he describes 'Pa's Garden'; then to Edna Walling and Ellis Stones, P.J. Hurley (for many years 'Waratah' of the Sydney Morning Herald), to Rosemary Hemphill, Joan Law Smith, Carol Parker and others. I even found a place in it myself, so I hope that I will not be accused of being biased when I say "Yes, this is a good anthology". I will continue to enjoy dipping into it for a long time.

### **Acacias of Australia, by Marion Simmons**

*Published by Thomas Nelson, Australia*

It has been estimated that there are more than 1200 species of Acacia, of which more than 700 are native to Australia.

This book covers a mere 150 of these species, and it is not entirely apparent on what basis these have been selected - for example some good garden species have been omitted and some that are rare in the wild have been included. It is not, therefore, a comprehensive treatise even on garden-worthy Acacias, indeed it does not set out to be - a book of just over 300 pages could hardly be a comprehensive treatise.

But it is a very well produced introduction to Australian Acacias; there is a page to each of the species described, the descriptions are systematic, and there is an excellent line drawing of each. The book is the result of a considerable amount of field work, for the material has all been drawn from living plants, not from herbarium specimens.

All those who have a serious interest in the Australian flora will find this a valuable book.

### **Shirley Stackhouse's Gardening Year**

*Published by Angus & Robertson.*

*Special offer of autographed copies now available at \$10.00 ea.*

Shirley Stackhouse has been writing a weekly gardening column in the Sydney Morning Herald for some fourteen years, and this book is based, though rather loosely, on what has appeared in that column over the years.

There is a chapter for each month, each chapter beginning with a 'check list' of what is flowering at that time of the year, what to plant, what to prune, what to spray, and so on. There follows a series of quite short articles on topics that are relevant to that month.

Shirley is one of those few people who can turn sound, practical horticultural advice into entertaining reading. Her style is light and unaffected, never stolid, and she moves easily from one subject to another. Her knowledge of plants is considerable, and she is also a talented artist (she studied art at Brisbane Technical College), so the book is profusely illustrated on every page with her own drawings, and in addition there are a number of excellent colour photographs. One or two typographical errors do not in any way detract from the book, which, as a reference book, or as a book to 'dip into' for half-an-hour's pleasant reading is remarkable value for \$10.00. In fact, it's such good value that no one with an interest in gardening should really miss it - see this page for details of this special offer.

### **William Robinson, 1838-1935: by Mea Allen**

*Published by Faber and Faber.*

*Recommended retail price \$29.95*

Sir Sydney Lee once said that "the aim of biography is the truthful transmission of personality". Harold Nicholson even believed that it was permissible to mix a little fiction with the facts in order to transmit personality more effectively.

Mea Allen was - it is sad that one has to use the past tense, for she died only a few months ago - no mean biographer. She tackled the Tradescants and the Hookers, Tom Rochford and E.A. Bowles, and did a good job with all of them. But in William Robinson she almost met her match.

It is fair to say that few others, if any, would have been more successful, for Robinson remained an enigmatic figure to the end of his life. Although he was a prolific writer, turning out magazines and books on gardening in a virtual torrent, he was not a communicative man. He had few close friends, and a good many enemies; he was regarded generally as being irascible, dogmatic, and 'difficult'. Apart from his books, he left no monument by which he can be remembered. His beloved garden at Gravetye, the only one he ever owned and the only one he ever made in its entirety - fell into total disrepair after his death, and has only recently been restored. In fact it was left to his disciple, Gertrude Jekyll, to translate most of his ideas into reality, into beautiful gardens.

So this is, in some respects, a disappointing book. It chronicles Robinson's life and his achievements accurately, but throws no new light on the man's character. Robinson was a revolutionary, but the fervour of revolution is missing, and his great adversary, Reginald Blomfield, rates only two brief mentions. Not everyone will agree either that Robinson was 'unquestionably the greatest of British gardeners'.

Nevertheless, all who have an interest in the history of gardening over the past one hundred and fifty years should read this book, for Robinson undoubtedly played a leading role in it. 'Father of the English Flower Garden' is a title he would have liked, and one which, having read this book, you may think he richly earned.

### **Great Comp and Its Garden, by R. Cameron**

*Published by Bachman & Turner;*

*Recommended retail price \$35.00*

This is the story of the making of a garden - a garden on seven acres around a historic old house in the English county of Kent.

Roderick Cameron and his wife made this garden, over a period of years starting in 1957, virtually unaided. In his introduction, Mr Cameron writes that "no plant is mentioned that we have not grown, no garden or building that one of us has not visited, and in general reference like 'I built a wall' or 'I dug a bed' means that I did it with my own hands". The maintenance of this garden is now a full-time job for them both.

He tells the story in some detail, describing visits to nurseries to buy plants, visits to other gardens to get ideas, the preparation of beds, the laying of paving slabs and the building of walls and terraces. Yet he tells it with great modesty, almost diffidence in fact, and herein lies the charm of this book. For this is not a self-confessed expert telling us how to make a garden, but a man who started with practically no horticultural knowledge telling us how he made his garden, how, by hard work and tenacity, and with great enthusiasm and loving care, he created a beautiful garden. Just how beautiful it is the reader will be able to judge from the hundred or so illustrations, a third of them in colour.

There is both enjoyment and inspiration to be derived from reading this delightful book.

## **SHIRLEY STACKHOUSE'S 'GARDENING YEAR'**

If you enjoy reading Shirley Stackhouse's column in the Sydney Morning Herald and Womans Day, you will love her book . . . Autographed copies of Shirley Stackhouse's 'Gardening Year' are available as a special offer for \$10.00 inclusive of postage . . .

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## English Gardens No. 9

### Mottisfont Abbey, Hampshire

Mottisfont was originally an Augustinian Abbey, the name being derived from two Saxon words, 'moot' meaning a meeting place, and 'font', a fountain.

In front of the house sweeping lawns slope down to a tributary of the River Test; trees, many of them of a great age, form a canopy around three sides of the lawn, while the house fills the fourth side. The most spectacular tree is a vast London Plane (*Platanus hispanica*), 100 feet high with a spread of some 1500 square yards; the girth of its twin trunks 3 feet from the ground is 36½ feet. It was originally two trees, as shown in old photographs, which coalesced and grew as one. It is probably the largest tree of any kind in the British Isles.

The soil is calcareous, so the planting is a good indication of what will grow on chalk. Surprisingly there are a number of Magnolias, including some fine *M. grandiflora* growing against one wall of the house. This lovely evergreen tree is regarded as slow-growing, but the cultivar planted here, 'Exmouth Variety', romped up the wall, even outstripping a Cotoneaster which had been interplanted for temporary cover.

On the north side of the house is a pleached lime alley and a formal design executed by Geoffrey Jellicoe in 1936.

In 1957 Mottisfont was presented to the National Trust by Mrs Leonard Russell. Later Mrs Russell gave up her tenure of the old walled kitchen garden, and this coincided with a decision of the Trust to form a collection of old shrub roses. The walled garden was ideal for such a collection, and beds were laid out by Graham Thomas. The collection now contains over 300 varieties, and practically every old European rose still in cultivation is represented.

The rose collection is now the main attraction at Mottisfont, presenting as it does a picture of the types of roses grown in gardens up to about 1900. Most of them bloom at midsummer (hopefully they will be at their best on 20th June this year) but some, like the Bourbons, last well into October.

The gardens, covering almost 21 acres, are looked after by a Head Gardener, with the help of one full-time man and one part-time woman.

### Cranborne Manor, Dorset

Cranborne Manor, in the heart of Thomas Hardy's Dorset countryside, was originally a hunting lodge of King John. It came into the possession of the Cecil family - who have owned it ever since - early in the seventeenth century, when King James I gave it to Robert Cecil. In 1604 Robert Cecil became Lord Cranborne, and shortly afterwards Earl of Salisbury. He reconstructed the house; the new west wing, and probably the two porches on the north and south sides, were designed by Inigo Jones.

John Tradescant the elder was gardener both to the King and to Robert Cecil, so it is fair to assume that he was responsible for most, if not all, of the original planning of the garden.

The present Marchioness of Salisbury went to live at Cranborne in 1954, and had to simplify the gardens to enable them to be maintained by a much reduced labour force. A skeleton of Tradescant's original garden, however, remains, notably the Mount, the bowling green and the yew hedges which enclose it.

The main axis continues from the steep gravelled drive through a yew arch into an enclosed herb garden, that contains only plants grown in the sixteenth and seventeenth centuries. From there a pollarded lime walk runs down the east side of the main court, at the end of which a door leads into an old orchard garden. Passing through another door at the north-east corner of the house one finds oneself on the stone balustraded terrace - said to be one of the finest of its period in England.

From the terrace two flights of steps fall to a walled white garden. The main walk here is lined with old espaliered apple trees, and through a gate at the bottom the view extends up an avenue of fastigate elms on the opposite hill.

At the west front of the house is the old bowling green, enclosed by centuries old yew hedges, and the Mount. Every Elizabethan garden of any pretensions had a Mount, which was 'made to be clambered up to view a fair prospect'. The high point of the Mount is crowned by a sundial, about which Hilaire Belloc wrote his irreverent couplet -

"I am a sundial, and I make a botch  
Of what is done far better by a watch"

The Mount itself has been made into an unusual rose garden, and Lady Salisbury has added considerably to her mother-in-law's collection of species and old shrub roses. Armed with Tradescant's lists, she has planted albas, gallicas and centifolias.

The soil at Cranborne is chalky and overlies solid chalk. A point of interest is that no chemical sprays of any sort are used in this garden.

## English Gardens Tour

Cranborne Manor and Mottisfont Abbey are two of the famous English gardens included in our Garden Tour this year.

The last in this series on English gardens, to be published in our April issue, will feature Hidcote Manor and Kiftsgate Court.

One alteration has had to be made to the itinerary. On Tuesday 28th June we were to have visited Mea Allen at West Wood, Southwold. Sadly, Mea Allen, whose recent biography of William Robinson is reviewed in this issue, died only a few months ago. Instead of going to Southwold we will now be visiting Venn's Farm, at Earl Stonham, in Suffolk. Mr Selwyn Smith has started to restore the old farmhouse, part of which dates from the twelfth century and which was in a dilapidated state when he bought it; he is also making a garden, entirely unaided, on the three acres which surround it. He says that the ethos of the garden is 'to make it a series of secret gardens, with rare, scented plants in unexpected places'.

This change means that we will not now be staying in Aldeburgh; instead we will be in Cambridge on the nights of 25th June to 28th June inclusive.

### ENGLISH GARDENS TOUR - 1983

**THERE IS STILL A CHANCE TO JOIN OUR ENGLISH GARDENS TOUR, DEPARTING 11TH JUNE, IF YOU CONTACT OUR TRAVEL AGENTS NOW. THE TOUR WILL BE PERSONALLY CONDUCTED BY JULIE KEEGAN & TIM NORTH, AND WILL VISIT SOME TWENTY FOUR OUTSTANDING GARDENS & NURSERIES IN THE SOUTH OF ENGLAND.**

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## A brief history of The Royal Botanic Gardens Melbourne

The present site for the Melbourne Botanic Gardens was chosen in 1845. The first Superintendent, Mr. John Arthur took up his duties the following year and began by fencing off 2 hectares on the lower slopes of Anderson Street. The four *Ulmus procera*, English Elm, planted by Arthur at that time are still flourishing on the Tennyson Lawn.

Arthur died in 1849 and was succeeded by John Dallachy. During his term of office, a scenic walk around the Lagoon (now the Ornamental Lake) was constructed and the area around the present "A" gate laid out with beds and paths.

In 1853 a young German, Dr F.J.H. Mueller (later Baron Sir Ferdinand von Mueller) took up the newly created post of Government Botanist for the infant Colony of Victoria. Mueller had trained as a chemist but he also held a PhD in botany and found the new continent, with its largely unknown flora, an exciting challenge. Within a month of arriving in Melbourne, Mueller left again on the first of his many extensive plant collecting trips. His enthusiasm and dedication were outstanding, he was to become the greatest systematic botanist Australia has ever known.

Mueller was appointed Director of the Botanic Gardens in 1857. In keeping with European styles, he planned a landscape crossed with formal narrow paths, lined with specimen trees. The emphasis was on scientific order with few open spaces. Mueller tried a large number of European and native plants for their economic and medicinal potential and thousands of seedlings were grown for distribution throughout the Colony.

However, by 1873, it was obvious that Mueller's vision of the Gardens as a scientific and educational institute did not meet the

general public's demand. After a Government Inquiry, Mueller was replaced as Director, by W.R. Guilfoyle, although he remained as Government Botanist until his death in 1896.

It is largely due to Guilfoyle's efforts that Melbourne now has one of the finest English landscape gardens in the world. Over 30 years Guilfoyle completely re-organized the gardens. He was influenced by a landscape design for the whole of the Domain proposed by Joseph Sayce. The formal paths and beds were replaced with wide curving walks, sweeping lawns and irregularly shaped beds - all designed to produce superb views. Many semi-mature trees were re-located, even during summer, an outstanding horticultural achievement. The Fern Gully was constructed around an old water course and became a favourite refuge from the summer heat. It was not until the Yarra River was straightened in the 1890's that Guilfoyle was able to realize his final design for the Lagoon as an Ornamental Lake - a central feature to focus the visitors attention. Guilfoyle also introduced colour and texture into the landscape with the mass bedding of flowers, in the 'gardensque' style. Although many of the display beds of annuals have gone, the Gardens are essentially as Guilfoyle left them on his retirement in 1909. Successive Directors have been primarily interested in consolidating the master design.

The major development in recent years has been the establishment of an Annexe at Cranbourne, south-east of Melbourne. The sandy heathland is ideally suited to the growing of native plants. The Annexe, purchased with assistance of trust funds formed with bequests from Miss M.M. Gibson, now covers more than 300 hectares. It is hoped that it will be open to the general public in the not too distant future.

(reprinted from the Newsletter of The Friends of the Royal Botanic Gardens Melbourne)



A MORETON BAY CHESTNUT (*CASTANOSPERMUM AUSTRALE*) PLANTED BY MISS M. GIBSON IN THE ROYAL BOTANIC GARDENS IN 1947

## Sister Botanic Gardens

The Missouri Botanical Garden (St. Louis, Missouri, U.S.A.), directed by Dr Peter Raven, and the Royal Botanic Gardens, Sydney have entered into a sister-garden relationship.

It is hoped that this relationship will facilitate the interchange of specimens, publications and people between institutions. There is also a proposal to extend reciprocal visitors' privileges between the respective 'Friends' organisations.

To quote from the Director of the Royal Botanic Gardens, Sydney, Dr Lawrie Johnson, "The aims and objects of the two Gardens, though not identical, are similar, embodying high standards and community service in scientific, educational, horticultural, and general amenity fields. The scientific program in Sydney is naturally concentrated on the Australian flora, whereas in Missouri the chief geographical concentration is in regions other than North America. Over the past decade, however, we in Sydney have tended to extend ourselves to a broad interest in the southern hemisphere, and both the living and herbarium collections sample the world flora. We hope to establish a New Caledonian Garden, which will be stocked largely from plants collected by the team from the MBG that has been working on that fascinating island for several years. The possibility of staff exchanges is in our minds, and of course all members of the Missouri Botanical Garden will be most welcome visitors here in Sydney. My research colleague and Senior Assistant Director, Dr Barbara Briggs, joins me in extending our best wishes to the Missouri Botanical Gardens through our very good friend, Peter Raven".

There are differences, as well as similarities between the two Gardens. For one, there is the climate. St. Louis, being situated in almost the centre of the United States, is subject to a marked continental climate. It can be hotter in summer than Sydney, but winters can be severe with snow on the ground for several weeks at a time.

Naturally, this has an effect upon the plants that are able to be grown outdoors. Missouri Botanical Gardens grow roses as a speciality and have much more material under glass than we do in Sydney. Their famous Climatron, built some 20 years ago, houses tropical forest trees and exotic plant life.

Because the Royal Botanic Gardens, Sydney are near the coast and almost at sea level a much greater range of plants can be grown outside. The living collections contain many specimen trees and they have a fine collection of Australian rainforest trees, a handsome Palm Grove, and an exposed Succulent Garden.

However many plants cannot be grown here even under such mild conditions. The Pyramid Glasshouse attracts thousands of visitors each year. There is a plan to complete the complex by constructing two additional pyramids in order to display the full complement of exotic and Australian native tropical plants held here.

Both Gardens are involved with programs relating to promotion and sponsorship. However it is in the area of Public Relations that the Sydney Gardens hope to learn more from their 'sister'.

Missouri Botanical Gardens are not set up as a Government institution and they are currently trying to obtain State funding for some of their development activities. They have recently opened their very impressive Ridgway Centre containing educational facilities, a display hall, sculpture gallery, an auditorium, a restaurant, shop and theatre.

Although not on such a grand scale, the Royal Botanic Gardens, Sydney also took a significant step in the same direction during 1982. The long-awaited new premises for the National Herbarium of New South Wales enabled a Visitor Centre to be opened in the old Herbarium building. The Visitor Centre caters for the general public and contains exhibitions and a Garden Shop and is a welcome addition to the institution.

The Gardens Restaurant, rebuilt after the original refreshment Kiosk was destroyed by fire in 1977, is a very attractive and popular cafeteria-restaurant.

The Missouri Botanical Gardens have an excellent library and a broad international outlook and are the most active of North American Gardens in relation to scientific projects.

The Missouri Botanical Gardens and the Royal Botanic Gardens have always enjoyed a close association, and the 'sister-garden' relationship is only a formalization of this already established link which hopefully will continue to their mutual advantage.

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## Friends of the Royal Botanic Gardens, Sydney

A Society, known as the Friends of the Royal Botanic Gardens, Sydney, has been established to encourage the use and enjoyment of the Gardens, and to improve community awareness of the scientific, historical, cultural and recreational functions of the Gardens.

The Society plans to offer its members lectures of specific interest, visits and presentations by international experts, special interest tours - including, possibly, interstate and overseas tours - practical workshops in subjects such as pruning, potting and planting, an opportunity to participate in some of the activities of the Gardens and Herbarium, and visits to areas 'behind the scenes'. It will also offer reciprocal benefits with Friends' organizations of other Gardens and museums, and will publish news and programme bulletins.

Events planned for the next two months include: a cocktail gathering at the Kiosk, followed by a conducted tour of the glasshouses and nurseries, on Thursday 3rd March: a morning coffee talk by Shirley Stackhouse on Friday 25th March: a special preview of the Autumn Walk of the Gardens on a date yet to be decided in early April: and a visit to the Mount Tomah Annexe, which is not yet open to the public, on Sunday 17th April.

There are four categories of membership, with annual subscriptions as shown:

Ordinary \$20.00  
Household \$25.00  
Students \$15.00  
Concessional \$15.00

Applications for membership of the Friends should be sent to:  
The Executive Officer,  
Friends of the Royal Botanic Gardens,  
Mrs Macquarie's Road, Sydney, 2000.

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## Oh, for a Spanish Garden!

Edna Walling, who is credited with having established the foundation of what may loosely be termed an Australian tradition in garden design, held what some may consider to be rather surprising views. Here are some of them, expressed in 'A Gardener's Log' (now, regrettably, out of print):-

"For sheer restfulness Spanish gardens, with their sheltered cloisters, sombre evergreens, paved courtyards, refreshing water features, and climbing and pot plants, that supply colour with so little labour, seem much superior, much more serviceable, than Australian gardens as a whole. It is really rather amazing that we have copies of the English style rather than of the Spanish or Italian, because in this climate protection from hot winds is so essential to intelligent living. Here in Australia, quite intelligent people continue to live in houses that get hot enough to roast them. Remarkably few have pergola-covered out-of-doors living rooms. The majority have only two doors, so that to enter a garden you must go to the back door or to the front door. Not to be able to bring the garden into the living room on a summer day would be intolerable to me. To be able to walk out on a cool paving which has just been hosed down, and to spread a cloth on a long, low table under vines for a late evening meal is not a luxury, it is essential!"

Others since, notably Dr Brian Morley of Adelaide Botanic Gardens, have remarked on this absence of any Mediterranean, or Islamic influence in Australian gardens - surprising because the climate in many parts of this country, our life-style, and the quality of light here make the typical Mediterranean garden in many ways a suitable model.

It may, therefore, be useful to look at the roots of this tradition, and its *raison d'être*, and to do this we must start in the fifth century B.C., when the Persians conquered Egypt. This resulted in the combination of two divergent expressions of gardening - the park and the enclosure, the Persian 'Pardes' (from which our word 'paradise' is derived) and the Egyptian walled, geometric garden.

The Persians were one of the earliest races to be converted to Islam, but their earlier religion, Zoroasterism, and the new religion of Islam, had one thing in common - both believed that Heaven was a garden. The Koran states that the Day of Judgment will take place 'in gardens of pleasure' where there will be 'a crowd of those of yore, and a few of those of the latter day, who will rest on gold-woven couches and be served with wine, fruits and flesh of fowl by eternal youths and wide-eyed maidens'.

There were four essential elements in the Persian garden; water for irrigation, and to give serenity and soothing sound; trees to give shade and shelter; flowers to give colour and fragrance; and music 'to delight the ear'.

Water there had to be, with pool and channels often forming intricate, though always symmetrical, patterns, with tiled borders and elaborate fountainheads. There were no sculptures, because the Koran expressly forbade the making of images. Religious symbolism often took the form of the wide right-angled cross, representing the four quarters of the universe which were, supposedly, separated by four great rivers. But the compelling need was for water - and shade, and peace. Persian gardens were very private, but they were by no means austere, for there was a great natural floral wealth to draw on - iris, daffodils, tulips, hyacinths, lilac, jasmine. Sometimes flower beds were sunk below the level of the surrounding paths, to give the effect of walking on a floral carpet. There was almost always a pavilion of some sort. The two favourite trees were the Cypress, the symbol of death (it never regenerates when cut) and the flowering Plum or Almond, the symbol of life.

Gradually, the Moslems spread through Asia Minor, North Africa and the Mediterranean countries, firmly implanting their garden heritage in every country they conquered. Strangely,

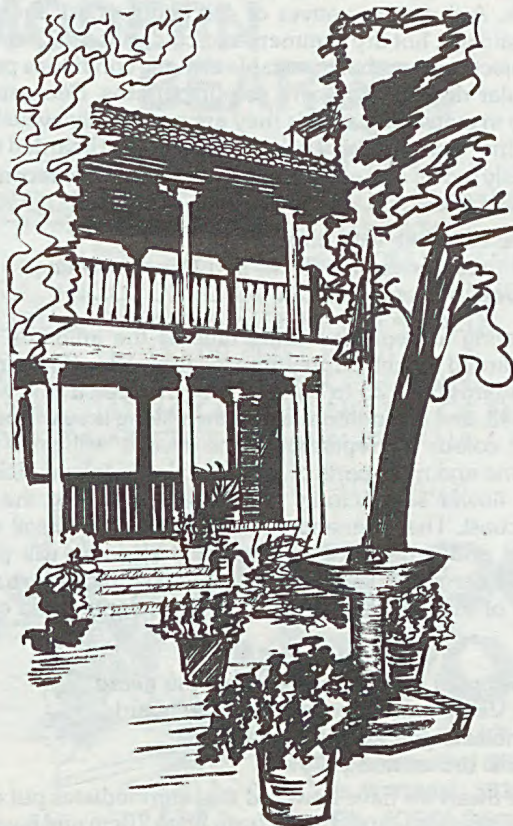
however, the finest remaining examples of early Islamic gardens are to be found in the furthestmost country to be occupied, Spain. It is in Spain, too, where the Islamic tradition survives in modern form.

It was in the eighth century A.D. that the Moors, one of the North African converts to Islam, began to arrive in Spain, ousting the Visigoths, who had in turn ousted the Romans. They stayed there until the fifteenth century, when they were eventually turned back by Christian forces, but during those seven hundred years they built up a civilization that far outshone that of neighbouring Christian countries.

The two most famous surviving Moslem gardens in Spain - though both have later additions - are the Alhambra and the Generalife, both at Granada, and separated from one another by a small ravine. The walls of both enclose a complete series of garden courts and rooms. At the Alhambra four of the original garden courts can still be seen, the central and dominating feature of each being water. The Generalife takes the form of an ascending series of courts and terraces; the courts are enclosed and from each terrace a different view is obtained of the surrounding countryside. There is a narrow patio within the oldest building with a central marble-lined canal, over which arching jets form a tunnel of water. Water arches of a similar type exist in other Spanish gardens.

The traditional Andalusian home is built around a court, which is derived in part from the Persian enclosed garden and in part from the Roman atrium. Flowering shrubs in pots, climbing plants, and cascading window boxes provide colour; there is usually a central water feature, and a common feature is the garden bower, or 'glorieta', derived from the Persian pavilion; this may be no more than a vine-covered arch, or it may be a circle of Cyresses with their tops bent over, or clipped to form arches. A wrought-iron gate affords a glimpse of this very private garden from the street.

Spanish gardens are colourful, cool, private, formal in their layout, and very simple in their maintenance needs.



THE PATIO DE LA REJA  
WITHIN THE PRIVATE APARTMENTS OF THE ALHAMBRA

# Growing Iris in Australia

by Graeme Grosvenor and John Taylor

The Iris, or Rainbow Flower, is well named. References to it have appeared in religion, in myths and legends, in medicine and botany, and in heraldry and magic since the dawn of history. The Iris comes to us in all the colours of the rainbow and in all combinations of colours and patterns, to make it the most colourful family in the plant kingdom. Many people are unaware that such well known garden favourites as babianas, sparaxis, watsonias, and gladioli are members of the family Iridaceae, a family which also includes hundreds of species little known outside their country of origin.

The Iris is essentially a Northern Hemisphere plant. Species are found in Europe, Asia and North America, but there is only one, *Pattersonia*, indigenous to the Southern Hemisphere. *Pattersonia* is found growing naturally in bushland in the Sydney region; the dark blue flowers are short lived but come in profusion from October to January. Propagation is from seed but sources of supply are hard to find.

In attempting to classify the genus *Iris* it is probably best to consider separately the bearded and the beardless species.

## Bearded Iris

The general flower form of the iris is one of six petals in two sets of three. In the bearded iris, those most commonly grown, there are three upright petals called standards and three rather horizontal petals called falls. These falls are adorned with bushy appendages called beards which add to the attractiveness of the flower but serve no biological function except possibly to attract potential natural pollinators.

The earliest bearded iris to flower are the Arils and the Arilbreds. Aril iris are natives of the Middle East and require sharp drainage, hot dry summers and cold winters. They are not easy subjects to grow but in suitable climatic conditions present a spectacular display of bizarre colour patterns. Because of the difficulty in cultivating aril iris they are not readily available, but arilbred iris - a cross between the aril and the tall bearded iris - are more easily grown and more readily available. Some recommended cultivars are:-

Engraved: white with blue lines  
Jade: green, with blue flecks and brown markings  
Nineveh: magenta and tan

Flowering at about the same time as the arilbreds are the dwarf bearded iris, miniatures growing from 12 to 25cm in height and standards from 25 to 35cm. These iris need a cold winter to flower well, and if conditions are to their liking they will present a blaze of colour in September. The dwarfs will grow well in Melbourne and most parts of Victoria, also in inland N.S.W. but will not flower satisfactorily in Sydney nor along the humid N.S.W. coast. They demand good drainage, fertile soil and full sun, and under these conditions each rhizome will produce several flowers. Dwarf bearded iris are ideal subjects for a rockery because of their size and growing habits. Some good cultivars are:

Gingerbread Man: brown with a blue beard  
Little Vamp: garnet red with a blue beard  
Moonblaze: grey with a blue blaze  
Wheels: brown and yellow

After the dwarf iris have flowered the intermediates put on their display. These iris vary in height from 38 to 70cm and have larger flowers than the dwarfs. They require similar cultivation but some intermediates will grow where dwarfs fail. Some reliable

cultivars are:

Arctic Fancy: white and violet plicata  
Cheers: white with a red beard  
June Prom: sky blue  
Sinbad the Sailor: gold and brown

Highlight of the iris season is when the tall bearded iris come into bloom. These magnificent flowers are easy to grow when their cultural needs are given due attention. They need good drainage, a well composted and heavily fertilized soil and maximum sunlight. Rhizomes should be planted, or old clumps divided, from December through to April, in prepared soil and well watered until established. Best results are obtained by adding a fertilizer of approximately 5:5:10. Osmocote, preferably the 8-9 month type at planting time, or any good low nitrogen fertilizer is good.

Tall bearded iris will flower from September right through October and November if a selection of early, mid-season and late cultivars is made. At least one flowering spike, with 6 to 15 flowers opening in succession, should be obtained in the first season. Once a rhizome has flowered it will not flower again, but should give from 2 to 6 or more increases which mature and flower the following year. Well cultivated iris will produce clumps with a dozen or more spikes in three to four years, after which the clumps should be divided and the best rhizomes replanted.

Bearded iris are relatively disease and pest free. Rhizome rot can be a problem with some cultivars in humid areas. If rot occurs the infected section should be scraped clean and the rhizome left to dry. Leaf spot, which is unsightly but not detrimental to the plant, can be controlled with most fungicides - Benlate does a good job, as does a combination of Bavistin and Dithane. Aphids can be a nuisance unless they are washed off with a hose, or sprayed with metasystox or malathion.

It is difficult to give a list of recommended tall bearded iris, as new and improved cultivars continue to come onto the market each year. Some excellent varieties are:

Cascade Pass: best reblooming white (flowers again in winter)  
Lacy Snowflake: late flowering heavily laced white  
Majestic Swan: early flowering warm creamy white  
Joan McClemens: new: early yellow: very good  
Launching Pad: yellow standards, white falls rimmed yellow, orange beard  
Virtuoso: early yellow  
Added Praise: mid blue  
Admiralty: dark blue  
Mary Francis: light blue orchid  
Adamsblack: red black; early  
Wind River: rich violet purple  
Como Surprise: purple; early  
Bang: brown  
Brimstone: mid-brown; early  
Mandolin: apricot orange  
Showtime: dusky pink  
Vanity: pure light pink  
Song of Erin: chartreuse

**Plicatas:** the Plicata pattern is where there is a solid ground colour stippled and edged to a varying degree by one or more other colours:

Blue Petticoats: white ground, dark blue plicata  
Decolletage: cream ground, mulberry plicata  
Going my way: white ground, purple plicata

**Bicolours:** different colours or shades of colours in the standards to that in the falls:

Shadow Magic: blue standards, dark blue to purple falls  
Latin Lover: pink standards, wine red falls  
Snowlight: white standards, yellow falls

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## IRIS and DAYLILIES

TALL BEARDED, LOUISIANA AND  
JAPANESE IRIS SPECIES  
AND WATER IRIS.  
DAYLILIES.

WEEKENDS OR BY APPOINTMENT

There are some iris from tall bearded breeding which do not reach 70cm in height. These are called border bearded iris, and are suitable for planting in front of the taller varieties. They need exactly the same culture. Some good border iris are:

Dresden Frills: pink  
Manzanita: plum and purple  
Royal Ruffles: blue

Propagation of bearded iris is by rhizome increase and this results in plants identical with the parents. New and often exciting cultivars can be obtained from seed by intercrossing. Pollen from the anthers of one iris is taken and rubbed across the stigmatic lip of another. If the cross is successful the ovaries of the pod parent will swell and seed will be formed; the pods ripen in 6 to 8 weeks, first lightening in colour, then turning brown and splitting at the top. Once the pod has turned brown the seed can be harvested; allow it to dry for 4 to 6 weeks, and then sow. The new seedlings will appear in the autumn and the first flowers are obtained two years after the initial cross.

Tall bearded iris are excellent in the general landscape, in the perennial garden and in rows or borders of the same or mixed colours. They are attractive cut flowers as each spike will present a continuous display for a week or more.

### Beardless irises

Beardless Iris can be further divided into the bulbous iris, the crested iris, and the smooth falled rhizomatous iris.

**Bulbous iris** are, for the most part, cold climate flowers. Small, but beautiful specimens like *I. reticulata*, *I. histrioides* and their hybrids are rapid of increase and attractive in clumps and drifts. They need good drainage and a cold winter to flower satisfactorily but are otherwise undemanding in their culture. Bulbs are usually available in late summer, should be planted in autumn, and flower in early spring. As soon as the foliage dies down they can be lifted and stored for planting the following season.

Spanish and English iris have larger flowers, but require much the same culture. While these iris are attractive, they have to some extent been overshadowed by the more easily grown Dutch iris, which will thrive in milder climates and withstand the humid summer conditions along the N.S.W. coast. Dutch iris flower in September and October. Bulbs should be purchased from reputable nurserymen as many are virus infected. This seems to be the only problem in growing these iris, which are attractive and popular as cut flowers . . .

**Evansias or Crested iris** are distinguished from other types by the raised crest on the falls. They are easily grown from rhizome division or from seed which comes true to the parent. All the Evansia group prefer a semi-shaded position and grow best in a well fertilized medium soil which will ensure rapid increase and good flowering. *I. japonica* has 3cm light blue flowers with yellow signals and fimbriated crests. Flowers can be expected in September and October on multi-branched stems holding 30 or more buds which open in succession and last two days, thus giving a long flowering period. There is a variegated leaved form which is equally easy to grow, but shy to bloom. *I. wattii* is similar and has larger flowers, but fewer of them to the spike. The flowers are mid blue, but there is a light blue form called Darjeeling. *I. tectorum*, called the Japanese roof iris because it is grown on the thatched roofs of houses in Japan, is actually a native of China. There are two distinct colour forms, a blue violet and a white. It is frost tender and should be planted in a protected, semi-shaded position from which it should be moved after two or three years, as its heavy feeding habits will quickly exhaust the soil. Other less well known Evansia species are: *I. cristata*, small lilac purple and white flowers; *I. gracilipes*, small lilac pink flowers; *I. milesii*, small reddish purple and white flowers. All Evansias are excellent rockery plants where their attractive growing habits make them an all year round delight. While the iris is essentially a spring and early summer flowering perennial, mention should be made of the winter flowering *I. unguicularis*, formerly known as *I. sylosa*. These small beardless iris are undemanding in their culture and are useful in the garden as they produce flowers in white and varying shades of blue when there is little other colour. The thin reedy foliage is a favourite haunt for snails; it is advisable to cut down the foliage in autumn as they will often flower in among the foliage and remain unseen.

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## Growing Iris in Australia (continued)

**Spuria iris** produce orchid like flowers on long stems late in October; they also are reasonably easy to cultivate but difficult to transplant. For this reason they should be planted in a permanent position where the tall upright foliage provides an accent in the garden. Spuria iris like a rich soil with plenty of water in the growing season, which differs from that of other iris. The foliage of these iris dies down after flowering and they remain dormant during the summer only to shoot again in February, and provide attractive foliage during winter when most iris do not look their best. Some good cultivars are:

Dawn Candle: yellow and white  
Landscape Blue: blue and yellow  
Minneopa: yellow, blue and white  
Woodwind: brown and yellow

**Sibirican iris** flower late in the season in October and November. They are easy to cultivate but like to be left in the same position for some years so should be planted in a permanent position. Planting can be done in autumn or winter as the foliage dies right down during the colder months when the clumps are best left alone. They like plenty of water in the growing season and flower best in climates with cold winters. Some good cultivars are:

Anniversary: white  
Grand Junction: mid-blue  
Lights of Paris: cream  
Pirouette: blue-purple

**Note:** other useful groups of iris - Louisianas, Californians and Kaempferis are covered in other articles in this issue.

## The Louisiana Iris

by Bob Raabe

The Louisiana Iris is a rhizomatous perennial native to south-central U.S.A. Three of the four recognized species - *I. fulva*, *I. nelsonii* and *I. giganticaerulea* - are swamp dwellers of the lower Mississippi River system, while the fourth, *I. brevicaulis* thrives in upland situations of good drainage.

Before 1920 they were hardly known in cultivation, and indeed it is only within the last forty years that they have caught the imagination of iris enthusiasts.

A stimulus to their cultivation in Australia was given by three American breeders who sent seed to the N.S.W. Region of the Iris Society of Australia in the early 1960's. Plants raised from this seed were a substantial improvement on any that had been grown previously; flower substance in the earlier plants had been poor, and this had been accepted as a characteristic of the group, with little attempt being made to improve it.

The three species of the Lower Mississippi have been hybridizing abundantly in Nature for many centuries, for every year they are subject to the cataclysmic flooding of the river and its tributaries, which carries both whole plants and seeds great distances. Although they have been greatly improved in recent years by hybridizers in the U.S.A. and in Australia work on hybridizing this group is still about a century behind that done on bearded irises. In fact, few perennial plants with such a limited natural distribution have greater potential for development as good garden plants.

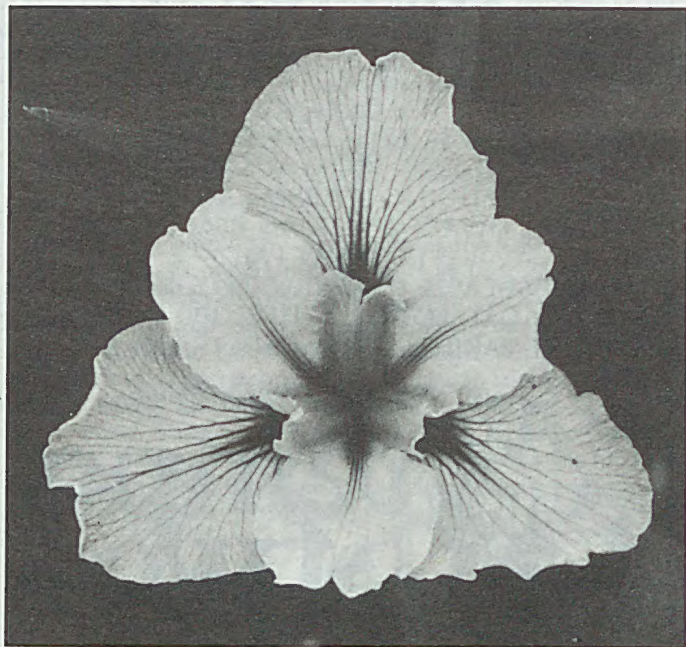
The genus *Iris* has been well represented in temperate gardens of the world for several hundred years, but regions with sub-tropical influences have often yielded failures with the more popular bearded and bulbous irises, as well as with the numerous cold-tolerant beardless irises. The Louisianas, therefore, have become popular in areas where other irises fail, or where they need special treatment to get them through wet summers.

Liking moisture and humidity, they are well suited to coastal areas of eastern Australia, especially to the Sydney region, where the climate is agreeably similar to that of the Gulf of Mexico coastal area, extending from the Mississippi delta region - moderately high rainfall, much of it falling in the active growing season, mild winters and hot summers. Louisianas also grow well in and around Melbourne, especially in the warmer sandy soiled suburbs near Port Phillip Bay and the sea. In Western Australia they grow well south of Perth, provided the rhizomes are protected from hot summer sun by an adequate mulch; when stimulated by autumn rains they will grow lushly through winter to flower in September and October.

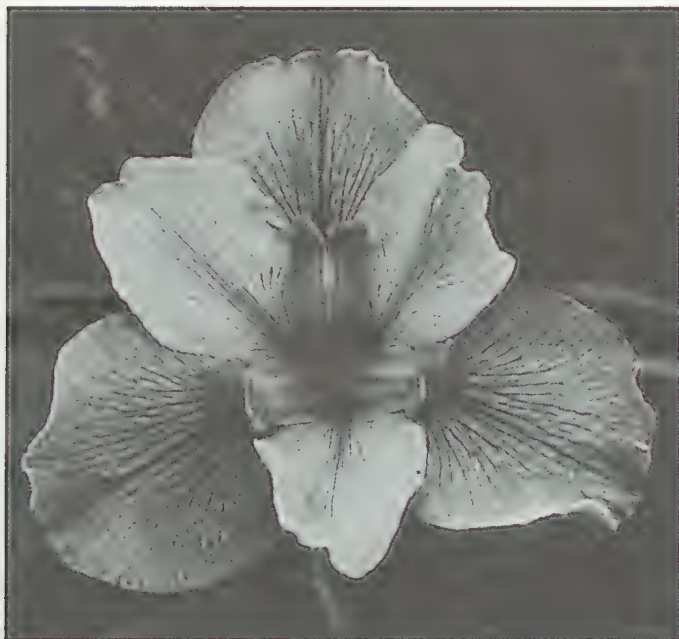
Colours in Louisianas range from almost pure white to buff, yellow, pink-red, blue, violet and purple, with added embellishments such as veining, bold signals and contrasting styles, which give endless variations of colours and patterns. One of the species, *I. fulva*, gives the closest to a true red in the entire genus.

Louisianas are excellent cut flowers for indoor display if cut in the mature bud stage. All buds will open over a period of several weeks and this way the fragile blooms are not damaged while being transported.

In the garden I find Louisianas make good subjects for what I define as 'the controlled woodland'. The vagaries and extremes of our climate, especially in rainfall patterns and temperature fluctuations make the true woodland garden virtually impossible. Many of the fine, traditional plants of this type of garden are often poor performers in a hot, dry spring and the following monsoonal summer rains that can last for three or four weeks, the latter bringing an oppressive humidity that covers shoes and books in a verdancy of green mould and afflicts all but the sturdier plants with mildews, fungi and rusts.



U80-331 - A LOUISIANA RAISED BY BOB RAABE



RAGTIME - A TETRAPLOID LOUISIANA

I consider it fortuitous that my first Louisiana iris, a less than mediocre seedling given by a friend, thrived in my rich heavy soil in Sydney's western suburbs, and seemed ideally suited to my environs and my temperament. I appreciated the active winter growth - refreshing greenery when deciduous plants were bare and most perennials resting in dormancy, the climax of rich colour in the spring and a return to the somewhat static, cool vegetation in summer. The heat of summer had little deleterious effect, particularly when rainfall was high or artificial watering applied - growth continued apace the year round. The intriguing 'end point' in this continuous cycle, when new growth superseded old, was a brief period in mid to late autumn when mature foliage tended to collapse and disappear amidst the strong growth of the new fans. Then and only then could the Louisiana irises be called untidy - and then only for three or four weeks, a performance few perennials could match.

The controlled woodland gardener must sacrifice a certain purist authenticity to be totally successful, especially in the subtropics. The Louisiana irises are vigorous contenders for garden space and quickly fill their allotted territory, especially if conditions are favourable. I like to think of them as boisterous rather than uncontrollably rampant! In one year they will fill the intervening spaces when planted thirty to forty five centimetres apart. Nonetheless there are suitable companion plants which will intersperse in their own competitive way among the rhizomes. *Tradescantia virginica*, which flowers continuously from mid-spring through late autumn, provides myriad ethereal blooms of blue, pink and violet among the iris plants. The Australian native *Viola hederacea*, with dainty violet and white flowers spreads quickly by runners through the rich soil of the iris beds. To balance the woodland composition some larger plants are needed. Having a great fondness for all irises, I find the taller spuria cultivars make magnificent background subjects with some similarities in growth patterns to the Louisianas, although the former prefer higher ground and better drainage. By mid-summer their foliage has collapsed and it is a simple enough operation to tidy up the area should it appear too unsightly. Intermittent clumps of *I. versicolor*, *virginica*, *setosa* and *tectorum* are placed among the Louisianas and these flourish in the relationship. I have tried to combine the Japanese irises with the

Louisianas in the same areas but the former are totally dormant while the latter are in their most active period, so obvious problems ensue. Chance Louisiana seedlings that may appear in the Japanese iris areas must be quickly removed or they will over-run their hosts. The choice of companion plants among the larger perennials and shrubs is greater for they can compete more successfully. Imagination and experimentation would surely locate dozens of companion plants which would associate happily with Louisiana irises and this in itself is an interesting project.

Tall, voracious evergreen trees, especially native Eucalypts, have greedy root systems which make conventional gardening beneath them difficult. However, by deeply digging beds, lining them with polythene sheeting, and then refilling the excavations with rich soil, the irises - and many other plants for that matter - can be grown right to the base of the tree. During rainy periods these areas are unsuitable for plants requiring drainage, but the Louisianas revel in the contained moisture. Dry weather watering is very simple as the beds remain quite wet from a weekly soaking. The selection of companion plants is greatly simplified as these can be placed along the outer edges of the polythene, and almost any plant can be accommodated merely by choosing the appropriate side of the polythene for planting. I have a large clump of *I. unguicularis* surrounded on three sides by polythene-lined beds containing Louisianas and the subterranean complex allows the somewhat incongruous, yet very attractive, association.

Under ideal conditions it is apparent that Louisiana irises will endure the most erratic treatment, provided that suitable compensation is provided. I have found that they can easily be lifted in full spike, provided that ample soil accompanies the root system and adequate watering is given in the new position. As I prefer to refurbish beds, divide plants and relocate others in early to mid summer, ripening seed pods must be considered. A clump of irises that is being shifted may have stems bearing seed pods carefully removed with their accompanying roots and leaves, replanted, carefully staked and labelled, and these pods will mature normally in a less conspicuous part of the garden. More by accidental neglect than intent, I found that rhizomes dug soon after flowering and dried for several weeks would burst into many vegetative divisions when planted in a moist soil beneath a light grass-clipping mulch. Most of these tiny plants mature sufficiently in the following months to bloom the next spring. I often adopt this procedure to increase irises which normally flower so

Cont: p.60

## Note

Bob Raabe, a past Federal President of the Iris Society of Australia, has been hybridizing Louisianas for the past three years at his Delta Country Iris Nursery at Uralba, near Alstonville, and for eight years prior to that at Wentworthville, in Sydney's western suburbs. His present nursery overlooks the mouth of the Richmond River, on the far north coast of New South Wales.

In 1982 his Uralba Gold received an Honourable Mention, the first time that such an award has been given to a Louisiana iris raised outside the U.S.A. He is now working on whites, blues without the frequent red influence that causes the flowers to have a lavender cast, and blooms with contrasting veining. He is also working with tetraploid varieties and seedlings, irises with greatly enhanced substance and vigour due to the doubling of the chromosome numbers. Pollination is carried out with the aid of forceps, and before seed pods are fully mature the seed is collected and treated to counteract a germination inhibitor present in the fully ripened seed. Following a period of refrigeration, and a brief soaking in a liquid fertilizer, the seeds are sown in prepared boxes.

Bob exports rhizomes to the U.S.A. and American varieties, in turn, are imported.

## Louisiana Iris (continued)

prolifically there are few natural increases to flower the following year. Even leafless bloom stems will yield by this treatment up to five or six small plants that will flower within ten months.

In mentioning these less conventional treatments, I don't wish to give the indication that Louisiana irises do not respond to and thrive under normal garden treatment. They must be considered primarily as somewhat specialized growing plants and secondly as a source of very attractive blooms.

When considering fertilizers, many growers have discovered the merits of cottonseed meal. Animal manures are useful, though poultry manure should be avoided as it seems to cause rhizome rot. A balanced inorganic fertilizer such as one with a 10:10:10 ratio is a tremendous stimulant if used while the irises are in active growth, particularly in the cooler winter months when soil temperatures reduce the quantity of available soluble nutrients.

Plants and blooms when grown under the conditions described will be consistently healthy, with only marauding slugs and snails to contend with.

Louisiana irises can also be grown in containers, but as they form extensive root systems an ample sized pot, tub or bag, with rich soil, must be provided to ensure full-size scapes and blooms. The soil mix must be porous, moisture retentive and possess all the nutrients the plant will need.

## Warrimoo Iris Nursery

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Iris still available this season include Tall, Median and Dwarf Bearded, Sibiricas, Evansias and Unguicularis - sold out till next year are Arils, Arilbreds, Kaempferi, Spurias & Louisianas:-

Sets of Iris slides available for loan.

Full List on Receipt of unattached 27c stamp.



PACIFIC COAST IRIS: photo Thompson & Morgan

## Californian Iris

The so-called 'Californians' or 'Pacific Coast' iris make few roots, so are not easy to establish as adult plants. They are, however, quite easily raised from seed.

*I. douglasiana* is perhaps the best known of this group, with prettily marked flowers on 25 to 30 cm stems which rise from clumps of sturdy, dark green leaves, tinged with red at the base. Seed of *I. douglasiana* gives rise to many colour forms, including violet, lavender, white, buff, yellow and apricot.

Like most of these iris species from the west coast of North America, it likes a fairly moist soil rich in humus, but needs to dry out for a while in summer. It will tolerate lime. Seed can be sown where the plants are to flower, and it is best to raise new plants from seed regularly, as when the clumps reach a diameter of 60 cm or so they produce less flowers.

*I. tenax* is a daintier plant, with a more limited colour range - usually violet, red-purple or grey, prettily marked on the falls, and carried on quite short stems. *I. bracteata* and *I. purdyi* have straw-yellow flowers, again with delicate markings and veining on the falls.

*I. innominata* is one of the best of the group, but is even more difficult than others to transplant when mature. The leaves, red tinged at the base like those of *I. douglasiana*, curve outwards to show off the blooms, which are on stems no more than 8 or 10 cm high, varying in colour from lavender to apricot and yellow.

All these 'Californian' iris, in fact, are extremely variable as to colour when raised from seed - which is one of their attractions, as every seed packet is a surprise packet. On the other hand, whereas seed of tall bearded iris will produce a good many worthless plants, a hundred seeds of these irises will produce a hundred worthwhile plants - assuming, of course, that they all survive.

Mixed seeds of these irises, under the name of 'Pacific Coast' iris, are available from Thompson and Morgan.

## The Iris Society of Australia

### N.S.W. Region:

P.O. Box 11, Gordon, 2072.

Annual Subscription: \$7 single; \$10 family

Meetings are held at St. John's Church Hall, Pacific H'Way, Gordon, on the first Thursday in February, May, August, September, October, November and December.

An Annual Show is held, also at St. John's Church Hall, Gordon, on the third Saturday in October.

A Newsletter is published seven times a year.

### Victorian Region

8 Brassey Avenue, Rosanna, 3084.

Annual subscription: \$7 single; \$10 family

Meetings are held at Welsh Church Hall, 320 La Trobe Street, Melbourne on the first Tuesday in each month (except July)

An Annual Show is held at Ross Hall, Church of England Girl's Grammar School, 82 Anderson Avenue, South Yarra on the last weekend in October.

A Newsletter is published ten times a year also a Year Book.

### Western Australian Region:

43 Ivanhoe Street, Morley, 6062.

Annual subscription: \$7 single; \$10 family



THREE TYPICAL 'PERSIAN IRIS' HYBRIDS FROM THE THOMPSON & MORGAN SEED COLLECTION

## Two strange and beautiful groups of Iris

Two rather rare and difficult groups of Iris, with flowers that are strangely and beautifully marked, reminding many of orchids, are the Onocycli and the Regelias.

Both come from distinct areas of the Middle East, from Turkey to Iran, and as may be expected from their natural habitat, they need sun-baking and resent excessive wet. They must have a position in full sun, and a perfectly drained soil - if necessary a raised bed should be constructed to accommodate them.

The Onocycli species, in particular, have the reputation of being difficult in cultivation. One of the best know, and at the same time, one of the easiest, is *I. susiana*: it has immense blooms that are carried on stems no more than twelve centimetres in height. The standards are rounded, and the falls slightly drooping - a characteristic of all the Onocycli. The flowers are subdued in colour - grey, veined and dotted all over with black, so it is not surprising that this funereal colouring should have earned this plant the name of the 'Mourning Iris'.

Rather more tricky is *I. gatesii*, again with huge flowers, veined and dotted with purple on a ground of greenish-white. Another species in this group is *I. loretii*, with flowers of a pale lavender ground colour thickly sprinkled with reddish-violet.

The Regelias are somewhat similar, but with smaller blooms, usually two or three on a stem, whereas the Onocycli only bear a single bloom on a stem. *I. hoogiana* has lavender-blue flowers, while *I. stolonifera* has light violet standards, veined and edged with brown, and white-veined purple-brown falls with bright blue signal patches.

Hybrids between these two groups, referred to as Regelio-Cyclus hybrids, are usually easier to grow and more free-flowering. They tend towards the Regelia parent in constitution, while maintaining the wonderful markings of the Onocycli. All flower in late spring.

In the early 1920's Mr William Mohr, of California, crossed *I. gatesii* with a tall bearded plicata iris called 'Paretiana'. The result was 'William Mohr', the forerunner of many Onocycli hybrids which combine the strange beauty of the Onocyclus species with the robustness of the tall bearded.

These plants are readily raised from seed provided the correct procedure is followed. After sowing the seeds in a (preferably) sterilized seed mixture in a clean tray, the tray should be placed in a polythene bag and put in the crisper drawer of a refrigerator (not in a deep freeze) for two weeks. After that it should be maintained at a steady 18 to 20 degrees Celsius: germination is erratic and may take anything from one to six months. Individual seedlings can be transplanted into small pots as soon as they are big enough to handle. If the seedlings lose their leaves, withhold water until growth re-starts.

Normally the plants die down in early summer and remain dormant until late autumn. Therefore seedlings which have not made much growth by early summer should be left in their pots until the following autumn.

Thompson and Morgan are now offering a selection of Onocyclus hybrids, under the name 'Persian Iris hybrids' in their 'Elite' seed range.

## Some Water and Bog Loving Iris

by G.B. Loveridge

Some people may have a stream running through their garden, but it is more likely that they will have a pond or a bog section where several types of iris can thrive.

Some of the most spectacular blooms among the iris family are provided by the Japanese iris (now more correctly called *ensata* rather than *kaempferi*). These cannot be grown with their rhizomes continually covered by stagnant water (as in ponds) as the rhizomes will rot during their dormant period. They can, however, be grown permanently in boggy conditions, or they can be grown in containers. When green leaf growth begins the containers can be placed in the pond with the soil level at, just below or just above water level. They can be left there until they start to go dormant, when they should be removed. So far as soil is concerned they need very acid conditions.

The *laevigata*, *pseudocorus* and *tridentata* groups can be grown in permanent stagnant water or in bogs.

For the edge of bogs, in beds kept moist through the growing season, can be grown *setosas*, *virginicas*, *versicolor*, *prismatica*, *longipetala*, *delavayi*, and *chrysographes*. The *foetidissimas* will do well in light or dense shade in these boggy areas. Plenty of compost or cow manure should be applied to such areas in the growing season.

Among the *laevigatas* are white and blue forms, a blue with variegated leaves, a red (Regal), a violet (Violet Parasol), blue and white (*albo purpurea* and *Colchesterensis*).

The *pseudocorus* are shades of yellow, and include Golden Queen, Sulphur Queen (a yellow with the leaves variegated in the young stage, later turning green), Kimhoski (a yellow *kaempferi* x *pseudocorus* hybrid) and Holden Clough (probably a *pseudocorus* x *chrysographes* hybrid, which give a brown effect in a clump).

*Tridentatas* are very late blooming, with small violet blooms.

*Setosas* are mainly bluish; *virginicas* are also bluish, or sometimes white or orchid. There is a red *versicolor* (Claret Cup). *Prismatica* is a small blue like a small *sibirica*. *Chrysographes* may be bluish, yellow, or red-purple. The *foetidissimas* are of at least three types - bluish, yellow, and yellow and brown.

The *kaempferis* are three, six or nine petalled, and some of the newer ones are branching. There are also some tetraploids now, like Raspberry Rimmed. Other good new varieties include Returning Tide, Niri Haro, Frosthady, Hagaromo, Wounded Dragon and Sakurrisighi.

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**Note:** Gordon Loveridge is the proprietor of Warrimoo Iris Nursery, in Leura, N.S.W. He has been breeding, importing and exporting iris for more than thirty years. His breeding has mainly been with arilbreds and spurias, several of which have been registered and introduced. He is a 'Director at Large' of the Aril Society International, and a judge of both the American Iris Society and the Iris Society of Australia).

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## News from Overseas

Sutton Place, near Guildford, in Surrey, England, a fine example of early Tudor architecture and once the home of John Paul Getty, is once again open to the public.

Geoffrey Jellicoe has produced working plans and drawings for an ambitious re-modelling of the landscape around the house. This work is in an early stage of development, but already contains a beautiful sculptured wall by Ben Nicholson, terminating one vista along the terrace, as well as an attractive formal garden. Other elements, which include a lake half-a-mile long, a Great Cascade, a Grotto, and a Surrealist Garden are under way. This development will be spread over the next four years.

## Nurseries specialising in Iris

**Warrimoo Iris Nursery**, 115 Craigend St, Leura, N.S.W. 2781

Gordon Loveridge started this nursery, as a mail order business, some fourteen years ago. It is a small nursery and does not stock large quantities of most varieties. A comprehensive mail order catalogue is produced, listing *kaempferis*, *laevigatas*, *pseudocorus*, *sibericas*, *louisianas*, *evansias*, *spurias*, *foetidissimas*, median and tall bearded iris, arils and arilbreds. In addition Mr Loveridge is building up stocks of *junos* and *reticulatas*, Dutch and English iris, as well as many of the harder to find Iridaceae, like *homerias*, *moreas*, *spatulatas*, *pavonias* and *hermodactylus*.

In a year or two he hopes to list herbaceous paeonies and possibly tree paeonies.

Mr Loveridge has tried to build up stocks of iris not only for the Sydney region, but of those types that do not do well in Sydney, but which are successful in many country and even alpine areas - like *gracilipes*, *cristata* and dwarf bearded iris.

He points out that they are in their fourth year of drought now, and watering is restricted to buckets. As a result of this many of his plants are undersized; these have now been marked on the catalogue 'sold out' until stocks improve.

**Rainbow Ridge Nursery**, 8 Taylors Road, Dural, N.S.W. 2158

Rainbow Ridge Nursery is run by Graeme and Helen Grosvenor and John Taylor. It has been built up slowly at the Dural address and opened for business with the public during 1982.

Several thousand varieties of iris are grown, and the catalogue features the best of Australian and overseas varieties, including the new tall bearded releases of Graeme Grosvenor and the new Louisiana releases of John Taylor, and of Charles Arny, of America, the world's leading hybridizer of these iris. There are many recently imported Japanese iris and daylilies on display, as well as 1500 rose bushes set out in display beds on five acres.

Iris and daylilies are available all year round, but tall bearded iris are best planted from November to April, Louisianas in the autumn, and Japanese in late autumn or winter.

**Tempo Two**, Leongatha Rd, Ellinbank, via Warragul, Vic, 3820

Barry Blyth and his wife Lesley last spring brought out their thirty-first consecutive Iris Catalogue; they also brought out their second enlarged Daylily Catalogue, though they have been growing Daylilies for ten years.

These two catalogues are possibly the best produced nursery catalogues in Australia. The superb colour photographs (30 in each catalogue) alone make them worth sending for.

The Blyths grow 1200 different varieties of iris, 600 being catalogued at any one time. They claim to have the most modern collection of iris of any nursery in the world. About 200 new varieties are imported each year, and an intensive hybridizing programme has been running now for twenty years. Each year they raise between 5000 and 12000 seedlings, and their registered and introduced varieties are catalogued by more than 20 nurseries in America and Europe. Plants are exported all over the world, and the list of awards they have won is impressive.

Barry and Lesley Blyth also run the Australian Iris Society's trial garden in Victoria.

If you want to see their collection of iris and daylilies the nursery is open to the public during the flowering season only - that is from early October till mid-November for iris, and from early December to the end of January for daylilies. Deliveries of bearded iris are made from 1st December to 31st March, and of Louisianas from 2nd January to 31st March. Deliveries of Daylilies can be made anytime.

Send \$1.00 each for the two catalogues - this includes postage.

## Water in the Garden

From earliest times, water has been an important element in the making of gardens. To the Persians and Egyptians, a thousand or so years ago, irrigation channels were a necessity, but they were associated with pools and fountains to form a central motif. The Moslems carried their ideas into Europe with them, while the Italians of the Renaissance took these ideas a stage further, creating elaborate waterworks on an almost overwhelming scale, sometimes using water to play 'tricks' on unsuspecting passers-by by squirting them from hidden jets. The English, in the eighteenth century, opted for large expanses of calm water, often crossed by Palladian or Chinoiserie bridges. The Japanese have, for centuries, insisted that every garden should have a 'feeling' for water, sometimes making a dry river bed of stones and gravel if a real one was impracticable.

Water, more than any other element, contributes to that 'refreshment of mind' that Gertrude Jekyll held to be part of 'the best purpose of a garden'. Ironically, the good Miss Jekyll was seldom at her best when handling water features, and many of her gardens did not even have one.

It is ironic, too, with this vast tradition on which to draw, that we generally manage to make such a botch of water gardens, many of which finish up as foul-smelling pools of putrescence in which nothing but mosquitoes thrive. And as for that almost ubiquitous water feature, the swimming pool, when will we learn how to integrate it into its surroundings and make it look something other than a ghastly eyesore which occupies most of what might otherwise be termed a garden?

From this one might infer that there is something about making a water feature that requires considerable skill. This is not

so: as in any other form of garden making one needs little more than a modicum of good taste, some common sense, and a little knowledge of what plants should go where. And a well designed, well constructed water feature is about as trouble-free and maintenance-free as anything one could wish for.

The following necessarily rather brief remarks on making water gardens may not therefore be amiss.

### **Formal or informal**

There are two quite different approaches to water gardening - the formal and the informal.

The formal water garden will normally be a focal point in a courtyard or a paved formal garden. Here the finish of the materials, the proportions, and the relationship of the feature to the whole area will be of paramount importance.

The informal water garden must blend in with its surroundings and look completely natural. For this reason it will normally be sited at a lower level than its surroundings.

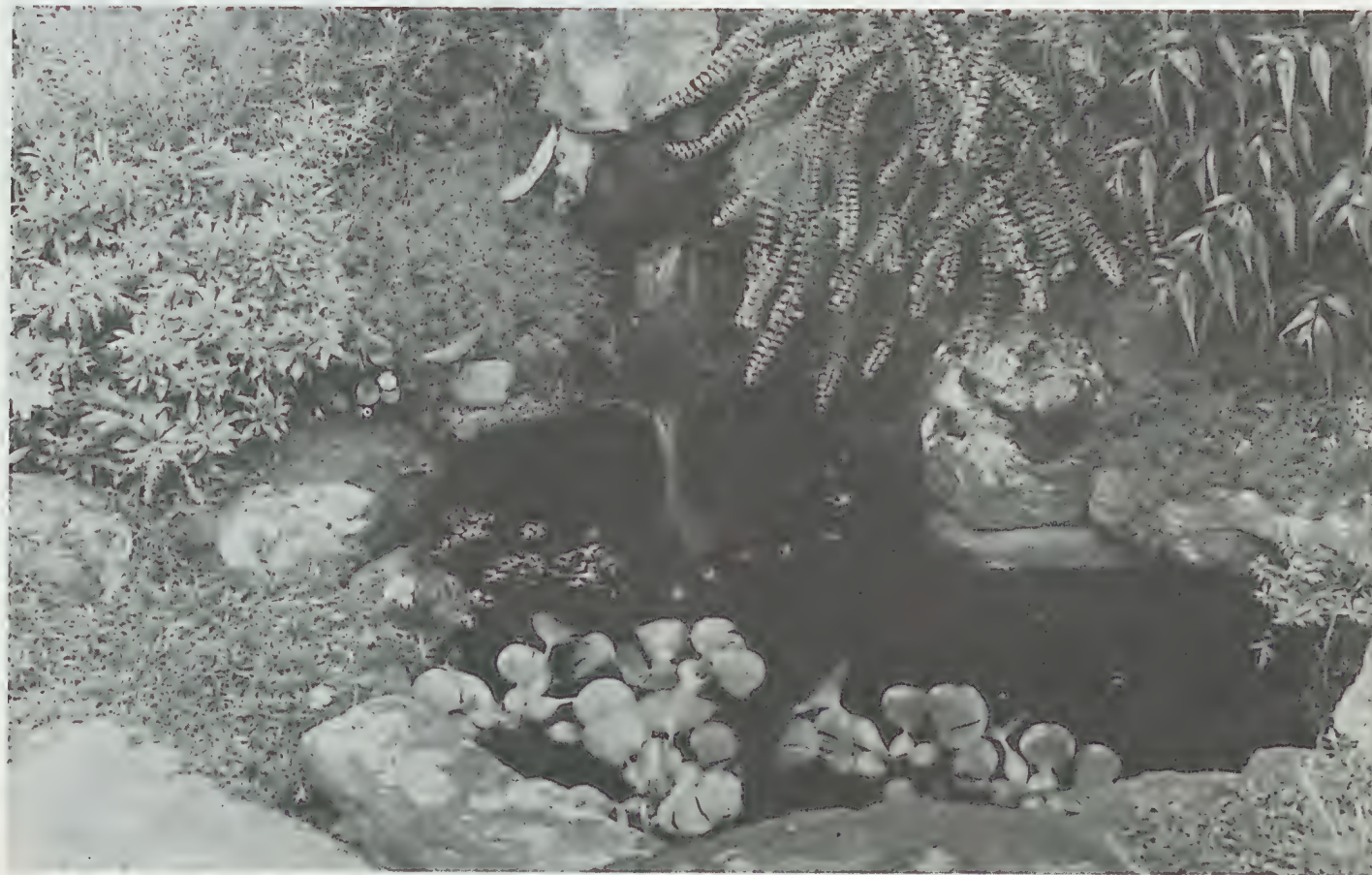
### **Position**

A water garden must be in an open sunny position. Water plants need sunlight like most other plants, and if a pool is overhung by trees falling leaves will be a continual problem.

### **Proportions**

It must also have the right proportions of water volume to surface area. Too small a capacity in relation to surface area means that there is insufficient water to absorb sunlight, hence the growth of algae, the bane of all water gardeners, will be encouraged. On the other hand, the greater the volume, the more will the sunlight be dispersed.

Take, for example, two circular pools with a diameter of ten feet; one is saucer shaped, with a maximum depth, in the centre, of 18 inches; the other has straight vertical sides and an even depth of 18 inches. The first will hold about 340 gallons of water, the second about 740 gallons - almost twice as much. Pools with



A WELL CONSTRUCTED ROCK POOL BY PETER VARMAN: Photo Garden Art Fountains

straight vertical sides are seldom practical, so the ideal pool shape is one with sides which slope inwards at an angle of about 20 degrees.

Another effect of a low volume/surface area ratio is a quick reaction to temperature changes, as between day and night, which is harmful to plants and fish.

How deep should a pool be? If you are going to grow water lilies it must be at least 12 inches - deeper for some types. Less than this is not really satisfactory for an informal pool. On the other hand, no pool, however big, needs to be deeper than 3 feet. A depth of 18 inches is sufficient for pools of up to 100 square feet surface area.

#### Choice of materials

Briefly, the choice is between concrete, a pre-formed fibreglass mould, or a heavy duty plastic liner.

Concrete is the most laborious in construction, but offers the greatest flexibility in shape and size. The pre-moulded fibreglass pool is very good, very easily installed, but there is a somewhat limited range of sizes and shapes. The third choice is the cheapest, and provided reasonable care is exercised in its installation, can be perfectly satisfactory for a number of years.

There is now a heavy duty pool liner called Polypond, more than twice as thick as a normal swimming pool liner, which is purchased in sheet form, and which will mould itself tightly to any pre-formed shape dug in the ground. It is double sided, and can be used with the brown side up or the sand-beige side up. There are three standard sized sheets, or it can be cut to order. Polypond has high stretch qualities, and is resistant to sunlight.

Both fibreglass pools and plastic liners should be laid on top of a bed of builder's sand. When using a plastic liner it is best to keep to fairly simple shapes, otherwise there could be some wrinkling.

#### Moving water

It is not necessary to have a natural water source. In fact the most successful water gardens are those which have no continuous supply of water from outside to lower the temperature or upset the pool balance.

Water that moves, either through a fountainhead or down a cascade, obviously adds to the interest, but water lilies in particular don't like the turbulence this causes. In any pool, therefore, whether formal or informal, there should be an area of calm water. In the formal garden, a fountain may help to counteract the heat absorbed by the surrounding paving.

Water is best moved by a pump which recirculates the same water. Pumps may be submersible, in which case they sit in the lowest part of the pool, unseen, or they may be exterior, in which

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case they are housed in a specially constructed chamber at one side of the pool.

Low voltage submersible pumps are supplied complete with a transformer; their advantage is that the cable between the transformer and the pump carries only 32 volts, so if it is accidentally cut while cultivating the garden, no harm to human life will result.

When buying a pump it is necessary to know its flow rate and its cut-off lift. Flow rate decreases in proportion to lift over one foot; for example a pump that has a 600 gallon per hour flow at one foot lift, and a cut-off lift of 11 feet, will give only half flow (i.e. 300 gallons) at 5 feet. There are few things more infuriating than, having installed a pump, finding that it won't lift the water to the top of the waterfall.



AN UNUSUAL WATER SCULPTURE BY EVA OSVARTH IN A COURTYARD GARDEN IN WOOLLAHRA, N.S.W. - Photo: Keva North

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### Pool surrounds

The formal pool will normally have a tiled or paved surround. The informal pool has to nestle into its surround to look as though it has always been there. Normally bush rocks are used to hide the pool margins, and they should slightly overhang the water surface. Preferably there should be some sort of rock work to form a background to the pool, whether or not a waterfall is incorporated. Provision can also be made for a bog garden, for example by constructing a dry wall inside the pool, and filling the enclosed section with soil.

### The problem of green water

Having constructed the pool the next step, of course, is to fill it with water - normally tap water. After a few days the original sparkling clear water looks rather like diluted pea soup. This is due to the growth of algae - microscopic forms of plant life that thrive under the influence of sunlight and warmth, combined with high carbon dioxide and dissolved mineral salt content in the water. The tap water, being high in mineral salts, is just what the algae like.

The initial reaction at this stage is often to siphon out all the murky water and fill the pool with fresh water - from the tap, thus starting the cycle all over again. The best thing to do is to wait a week, then plant the pool to capacity, and forget all about it for at least two weeks. Surprisingly, the water will eventually clear and look as sparkling as a gin and tonic. The algae may return from time to time, but once the pool has a proper 'balance' can easily be kept under control.

### Planting the pool

The rule is - plants first, then fish. The submerged oxygenating plants, which are essential for clear water, must be established before the fish are added, otherwise the fish will pull them to pieces.



A LARGE-SCALE WATER FEATURE OUTSIDE A BLOCK OF HOME UNITS IN EDGECLIFF, N.S.W. - Photo: Keva North



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## Water gardens continued

These oxygenating plants consume mineral salts, thereby competing with the algae and eventually defeating them. They produce oxygen - as nearly all plants do - but being submerged they release the oxygen into the water instead of into the air. They are usually bought in bunches of unrooted cuttings and should be planted at the rate of about one bunch to every two square feet of water surface.

Floating plants provide shade, and in doing so also help to control algae. They should be dropped in (they don't need planting) at the rate of about one plant to every ten square feet of surface.

The general rule in planting a pool is the opposite to that for planting a border. Instead of giving the plants plenty of space in which to develop plant at maximum density at the beginning, and thin out when necessary.

Submerged plants are best planted in squat plastic pots (avoid terracotta which may foul the water, and narrow ones which easily topple over), and preferably should have perforated sides to permit a free exchange of dissolved gases between soil and water. Plant in ordinary soil and cover the surface with sand or gravel to prevent the fish from disturbing the soil.

Water lilies can be planted in plastic bowls, with perforated sides. A little rotted cow manure should be put in the bottom of the container, and if necessary the sides can be lined with old turves. Different types of water lilies need different depths of water, and the level of the container can be adjusted with bricks if necessary.

Water lilies may need repotting in the spring, which affords a good opportunity for a general clean-up of the pool.

### Fish - and other creatures

Fish will eat the eggs of mosquitoes and other flying insects - which is a good argument for having them.

Don't be surprised if after a short time, you have a large number of uninvited guests in your pool. Tadpoles may be there by the thousand; but they provide extra food for the fish when small, and will themselves feed on decaying plant material and other rubbish. Frogs and toads may be a nuisance during the mating season, but remember that when this is over they will move into other parts of the garden and spend the rest of the year helping to keep them free of slugs and snails. Water beetles are generally harmless, though there are a few fiends - you will soon learn to recognize them. A well stocked pool, in fact, maintains a remarkable ecological balance.

### Finally . . .

There is, of course, much more to learn about making a water garden, planting it, and stocking it. If it is done in the right way, it will be a totally absorbing feature that always draws one to it, a never ceasing source of interest and inspiration.

To make sure you do it the right way, consult a firm that specialises in water gardens.

## Water garden specialists

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## More Simple Seeds

Thompson and Morgan introduced their 'Simplicity' range last spring, the idea being that the range would include 'simple' plants that could be easily grown from seed sown where the plants are to flower. It included some old and almost forgotten annuals that made a most welcome re-appearance, some of them looking better than ever before. There was Hawk's Beard and Ragged Robin, and a new and dwarfer Corn Cockle.

They have now extended this range with some more old favourites, this time for autumn sowing.

There is Venus' Looking Glass, now called *Legousia speculum-veneris*, thought older gardeners may remember it as *Speculum grandiflora*. It is a showy annual from Western Asia, branching from the base and producing large numbers of saucer-shaped violet-mauve flowers up to 2.5cm in diameter, often in clusters, from spring to early autumn. It grows equally well in full sun or partial shade, and sets seed freely. The flowers are good for cutting, and it makes a good subject for a pot or hanging basket.

The Everlasting Drumstick Scabious, *Scabiosa stellata*, was lost to cultivation for more than a hundred years. Before being re-discovered recently in the Botanical Gardens at Uppsala, in Sweden, its last known appearance was in an 1874 English seed catalogue, where it was listed as 'Starry Scabious'. It has 4cm diameter powder-blue flowers which dry to a burnished bronze - this being the plant's main feature. Up to 30 blooms are produced on tall, stiff stems.

The Mississippi Primrose, *Oenothera acaulis*, has ice-white blooms up to 8cm across, that change through shades of cream to shell-pink. It is prolific and long-flowering, and the flowers are more weather-resistant than those of white petunias.



BIRDS EYES: Photo Thompson & Morgan

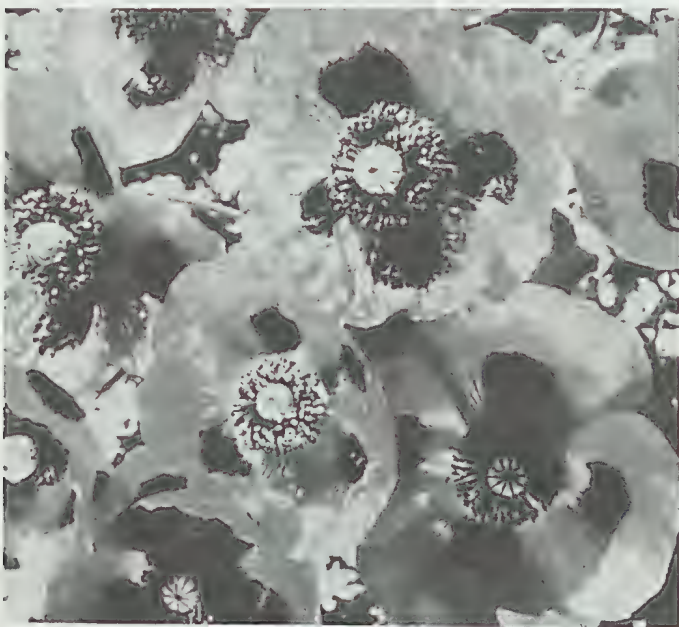
Birds Eyes, *Gilia tricolor*, produces masses of bell-shaped flowers in clusters; they are flushed magenta-pink, with white, yellow and rich brown markings in the throat, and a fragrance that resembles that of chocolate. The foliage is soft and fern-like.

Also included in the 'Simplicity' range is a new hyacinth-flowered penstemon, with flowers set all around the stem and not just on one side - the colours are scarlet, rose-pink, violet and deep blue; the once familiar Flanders Poppy, *Papaver rhoeas*, and a new compact pansy with 5 to 8cm blooms in midnight purple with a bright yellow eye.

These seeds will be available from this month on all Thompson and Morgan seed stands.



VENUS'S LOOKING GLASS - Photo: Thompson & Morgan



FLANDERS POPPY - Photo: Thompson & Morgan

## Flowers of the Verges

by Shirley Stackhouse

Road verges, hedges and the land beside railway lines have always provided a protected habitat for flowers of the field and garden escapes that have followed in the wake of the people who travel out along the roads.

In Britain and Europe the hedges have provided shelter for a whole range of small birds, animals and insects including butterflies, as well as flowers which have been driven from the intensively cultivated, fertilised and herbicide-sprayed fields and the traffic-filled roads.

Though the destruction of many of Britain's old hedges has threatened many of these species in recent years - causing panic among naturelovers in the old Dart - it is still possible to drive along roads, even busy highways, and see colonies of wildflowers - cowslips, primroses, violets, ladies smock and bluebells - blooming along the verges.

Our Australian roadside flowers tend to be of a more robust nature - the vivid rose pink of wild hops that spreads along the inland routes of the Afghan camel driver, supposedly from seed dropped from the camel bags - the brilliant blue of Salvation Jane (or Paterson's curse) a garden escape which has spread to become the curse of farmers and the salvation of the beekeepers.

In coastal N.S.W. the most famous roadside flower is the bright golden calliopsis or Coreopsis which turns road verges and railway lines into a sea of waving gold in spring and summer. There are always stories cropping up about little old ladies who spent their days riding on trams and trains round Sydney and country areas of New South Wales, scattering coreopsis seeds from the windows. However, it probably just made its own way along with the help of road making machinery and wind.

I enjoy the garden escapes that grow beside our railway lines in the Sydney area. You can always tell whether you are passing through a classy suburb - the quality of the flowers is better. The gardeners in the richer suburbs throw out high-class garden rubbish which includes lilliums, iris, daffodils, freesias, while in poorer areas nasturtiums predominate.

Looking out for the seasonal flower displays along the railway lines can relieve the tedium of train travel. Along Sydney's North Shore Line there are spring displays of Dorothy Perkins roses tumbling down steep banks, millions of freesias clinging to the rocky cuttings, golden broom and purple twining pea cover open spaces. In autumn tall stands of golden rod appear and the summer coreopsis and blue morning glory bring colour.

On some lines dill, chicory and fennel line the rails - some people claim that these have appeared since the post-war migrants brought more interesting herbs into suburban gardens.

Years ago when we lived in Melbourne, I used to travel by train out to Greensborough. In spring the lines were almost swamped by a tide of Watsonias and where they grew densest of all there was a suburb called Watsonia.

In my hometown of Brisbane we used to be intrigued by a giant sunflower which grew only along the railway lines - a great tall shrubby plant covered with large, shaggy sunflowers which my mother greatly coveted for flower arrangements. She was always persuading us to climb illegally through barbed wire railway fences to gather these flowers and though we also gathered seed in the hope of being saved from these expeditions fraught with danger of railwaymen looking for trespassers and the possibility of snakes, she never managed to grow this plant. It seemed to need the railway line environment to prosper.

Road verges and railway lines provide a habitat for native plants as well as for garden escapes. Quite often when the bulldozers move into an area being opened for housing, the only place left for the local wildflowers to survive is along the verges.

The most dramatic place to see this effect is in West Australia where vast tracts of wildflowers are eradicated to make way for wheat and oil seed. One wonders whether the tourists who travel from all over the world to see W.A.'s wonderful wildflower display in spring will eventually be reduced to admiring the survivors along the verges.

As a matter of fact if you are searching for rare or unusual plants the verges and railway lines are worth keeping a sharp eye on. Quite often some long lost garden flower survives in a railway cutting and natives thought to have been lost have been found again by botanically minded train travellers.

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## Garden Island

Garden Island, in Sydney Harbour only a short distance from the Opera House, is to-day a conglomeration of workshops, cranes and other heavy equipment, almost surrounded by ships of the Royal Australian Navy.

Once, however, Garden Island was a garden. In fact it was so named by Governor Phillip because it was the only island in the harbour with soil suitable for gardening. The log of H.M.S. 'Sirius' for 11th February 1788 (just sixteen days after the founding of the settlement at Sydney Cove) contains this entry "Sent an officer and party of men to the Garden Island to clear it for garden for the ship's company." After the long sea voyage there were a number of cases of scurvy, brought about by indifferent rations and crowded conditions, so the growing of fresh vegetables was naturally a high priority. In a letter dated 19th February 1789 - just a year later - Lieut. Daniel Southwell, on board H.M.S. 'Sirius', wrote "When we left Cape Jackson we left a man to look after a kind of kitchen garden situated on a small island in the harbour, and appropriated to the service of H.M.S. 'Sirius'. Should this succeed and yield increase it will prove of good use and worth the labour it cost. But though we may, at our arrival, be longing for refreshment of this nature yet, for our own part, I will not be sanguine, for not only our black but our still more barbarous neighbours, the convicts, may have despoiled or destroyed it".

However, the gardens must have been successful, for after the loss of H.M.S. 'Sirius' other ships, including H.M.S. 'Lady Nelson' are recorded as having obtained supplies from the island; on the 8th January 1801 a government and general order was issued to the effect that Garden Island was appropriated to H.M.S. 'Lady Nelson' and that no person was to land there "without permission of Lieut. Grant or the Governor's in his absence."

The topography of the island at this time consisted of two rocky hummocks with a saddle between, where the gardens were cultivated. The northern hummock still remains, but the southern one was subsequently levelled.

The association between the island and the navy was broken by Governor Macquarie in 1811, and after that the island had varying fortunes. It was not until 1856 that Captain Freemantle on behalf of the Admiralty accepted the government's offer to make the island available, once again, for the use of Her Majesty's ships in Australian waters. Work on the establishment of a naval depot was commenced in 1886; part of this work involved an extensive reclamation which eventually was to increase the size of the island, from its original 11 acres, to just over 20 acres. Now the island is joined to the mainland by the Captain Cook Graving Dock, and it has become one of the best equipped naval bases in the southern hemisphere.

## The Horticultural Achievements of Thomas Jefferson

The horticultural pursuits of Thomas Jefferson, 3rd President of the United States, will be more evident than ever before with the restoration of his vegetable garden and orchard at Monticello, his mountaintop estate at Charlottesville, Virginia. This restoration was completed last year under the directions of the Thomas Jefferson Memorial Foundation.

The original one thousand feet long vegetable garden, completed in 1809, was located on the platform carved into the southern slope of the mountain. That, and the eight acre orchard below were used both for food production and for experimental work in eliminating inferior varieties. In the vegetable garden alone some 250 varieties were grown, including 19 varieties of pea.

The restoration has been made possible by the existence of Jefferson's very precise memoranda of 1812, and archaeological work has indicated the exact course of the fence lines and pinpointed the original gate locations. In the orchard, soil stains from rotted tree roots have indicated individual tree locations, and have made it possible to plant apples, pears, quinces and nectarines in the original grid configuration. In this orchard Jefferson experimented with 122 varieties of different types of fruit, including apples, pears, plums, quinces and cherries.

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hard shell nuts**

## In Praise of the Regal Pelargonium

by Betty Hudson

Springtime in Sydney often appears to me to give spring-flowering plants a hard time: they are just budding up nicely at the end of winter when - pow! - summer arrives, usually for a day then they're blown to bits with a gusty southerly change. Then it's back to winter for a week or so until another sudden hot day. The azaleas this year were a perfect picture for about 2 days, then a sudden heavy shower of rain and some hot days put paid to their glorious display.

All of this leads me to the main point of this article: gardeners are remembering that the regal pelargonium (*Pelargonium X domesticum*) is capable of producing a floral display very similar to an azalea but lasting a much longer period. They also have the advantage of a general lack of fungal diseases. However, they are susceptible to attack by white fly and aphids. A regular spraying with Malathion® under leaves and around flower buds will keep these pests under control (i.e. spray once every 10-14 days) or, alternatively, some growers have found success with marigolds as a companion plant.

Regal pelargoniums begin flowering in early spring and as each inflorescence opens, to encourage the bush to keep producing flowers, simply pick the heads. A second lot of flowers rapidly appear - now, when you pick these, remove at the next node down the stem (this is still near the top of the plant); this forces new growth which will produce more flowers. Keep 'pruning' in this manner until March when the plant is finally exhausted from all that flower production.

We now commence serious pruning: usually removing two-thirds of the bush. If the plant is 2 years old or more, it will have developed 'old' greyish coloured wood at the base. Growing from this the stems take on a 'reddish' appearance leading to the top growth which is green. The plants should be cut back to 2 or 3 nodes above where the 'red' wood appears above the old wood. The fresh top growth is then used for cuttings; the 'red' wood may also be used for cuttings but will take longer to root.

It should be emphasised that, for a well-shaped plant, pruning must begin when the plant is still very young. One often sees leggy old specimens in gardens and when the owners are informed they should be pruned, they cut into the old wood and the shock is too much for the poor old hitherto neglected pelargonium and it promptly dies.

However, commenced early, the plant will shape nicely, producing more flowers each year, eventually attaining dimensions of approximately one metre by one metre. It is also crucial that after this initial pruning, the tips of the new shoots are pinched to force more branching. This should be done until July and then ceased because flower buds will then be forming. (It takes approximately 8 weeks from formation of bud to flower).

If an old bush is being pruned it is advisable to cut back about one-third of the branches; that is, two-thirds of the plant will be untouched, the other third cut back as hard as deemed feasible; after about 2 weeks, new shoots should be appearing on the cut portions; then another third of the plant may be cut; again, about 2 weeks after this, the final third of the plant is pruned. This procedure minimises the shock to the plant. An application of well balanced fertiliser is recommended at this time of pruning to help stimulate the growth of shoots before slowing down for the winter months.

Regal pelargoniums would appear to be happier in filtered sunlight; while tolerating more direct sunlight, hot days will scorch the flowers (and leaves) - the plants then look bedraggled and one loses the beauty of the flowers. Three or four inflorescences picked with a few leaves make great posies and will last in water 2 weeks or more. Colour range is pink, red, mauve, purple, salmon, dark maroon, white and many combinations of these.

The flowers usually have five petals and the two upper petals in particular often have a mark referred to as blotching or feathering. Some cultivars also have ruffled edges.

Regal pelargoniums become woody with age and after 5 or 6 years may be replaced with new plants. However, it is possible to keep them longer than this: I have one in a pot now 9 years old and still producing fresh foliage each spring and masses of flowers.

So if you are prepared to spend a little time on a regular basis caring for your pelargoniums, they will reward you for many months and attract gasps of admiration from your friends at their colourful display.



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THE HERB GARDEN OF ABERLOUR

## A Cottage Garden Nursery in Yass

News of another 'old-fashioned' nursery that offers personal service rather than the 'take your trolley to the check-out' syndrome is always good news.

Cedric Bryant and his wife started their nursery in Yass, in southern New South Wales, in 1980. They had just bought two acres of land on which stood a brick house and a range of buildings which had originally been stables, a coachhouse and groom's quarters, with a large hay loft. The buildings were in a bad state of disrepair, they had earth floors and the doors were falling off.

The Bryants were adamant that they did not want another 'supermarket' type nursery; instead they have developed their site into a nursery garden, similar to the old English cottage nursery concept. The old coach house and stables have been converted into a showroom, and much of the two acres has been laid out as display gardens. More than four hundred trees and shrubs have been planted in the display areas, which have paths and garden seats. They include a rose garden, and several different designs for herb gardens, laid out with brick paths and operating gas lights.

Many native and exotic trees and shrubs are propagated, with some unusual varieties being imported from overseas.

The name of the property has been 'Aberlour' since the beginning of the century, so the full name of the nursery is now - Bryant's Nursery and the Herb Garden of Aberlour. You will find them at 50 Cobham Street, Yass, N.S.W. 2582, Telephone (062) 26 2175.

## Franklinia

*Franklinia alatamaha* (named after Benjamin Franklin) is a flowering, deciduous tree discovered in Georgia, U.S.A. in 1765; however, it became extinct shortly after its discovery.

Its disappearance has remained a mystery, though various theories have been advanced. One such theory is that it originated as the result of a spontaneous doubling of the chromosome complement of a naturally occurring interspecific hybrid, possibly between *Gordonia* (which it closely resembles) and *Schima*. On the other hand morphological characteristics support its status as a monotypic genus.

Ackerman and Williams have suggested that *Franklinia* is a remnant of a genus of possibly subtropical origin that may have flourished before the Ice Ages.

It hybridizes readily with *Gordonia*, and some successful crosses have been made with *Camellia japonica* and *C. sasanqua*. *Franklinia* x *Camellia* hybrids, it is suggested, could have commercial potential in increasing the cold hardiness of the latter, while changing the colour and flower form of the former.

(Source: Intergeneric crosses within Theaceae and the successful hybridization of *C. japonica* and *C. sasanqua* with *F. alatamaha*. Ackermann and Williams, Hort. Science (USA) Vol 17 No. 4)

## The biological control of insect pests

A newly formed company, Biocontrol, of Warwick in southern Queensland has started the marketing of the first in an interesting range of new products for the control of pests in home gardens and nurseries.

This is the Predatory Mite (*Phytoseiulus persimilis*) for the control of the Two Spotted or Red Spider Mite. This predator, which has been commercially available in Europe and the United States for some ten years, has recently been found occurring naturally in Australia. Since this discovery it has been the subject of research by the State Departments of Agriculture in both New South Wales and Victoria. When introduced early, when mite outbreaks are just beginning, the predator has been shown to multiply and to give complete control, reducing the pest population to a level at which it is insignificant and thus establishing an equilibrium in which neither species is obvious. This equilibrium can remain for a season or two, but may be upset by the use of chemical pesticides toxic to the predator. Care has to be exercised, therefore, in the selection of insecticides for the other pests.

In the near future Biocontrol will be offering a more extensive range of biological agents, including the tiny beetle, *Cryptolaemus montrouzieri* for the control of mealy bug on foliage plants, *Aphidius* species wasps for the control of aphids in protected cultivation, and *Coccinella rependa*, the common orange and black spotted ladybird, also for aphid control.

It should be remembered that predatory insects are safe, effective, self-perpetuating, and involve a minimum of labour.

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### Recipe for riding on a broomstick

Make an ointment from the leaves of belladonna, stramonium, monkshood and celery seed. Add to it one toad. Rub it on your body and your broomstick.

From a 17th Century formula in Jeanne Rose's Herbal  
(with acknowledgments to the Fragrant Garden, Portsmouth Road, Erina, N.S.W.)

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## Rainforest Plants as Garden Subjects

by Graham Quint

For most people familiar with the cultivation of the dry, sclerophyll Australian flora such as Grevilleas, Callistemons, Mintbushes and Eucalypts, our country's rainforest flora presents an exciting new challenge.

Everyone can grow our rainforest plants. Even if you have only a small block of land you can still grow a number of rainforest varieties because that is how they grow naturally - huddled close together, competing for space and forming a dense protective canopy. If you live in a home unit or a villa try growing rainforest plants as bonsais or indoor plants. Flowering bonsai Illawarra Flame Trees or pink flowered Blueberry Ash can be spectacular specimen plants.

If you are interested in growing native plants that have the added bonus of supplying delicious or interesting fruit, then rainforest plants are for you. In the early days of European settlement in this country, many of our rainforest fruits were used for the making of jams, refreshing drinks or were eaten as they were. For thousands of years before that our country's original inhabitants, the Aborigines, would have had an intimate knowledge of this wild food and it is a tragedy that we, the more recent Australians, weren't prepared to learn from their environmental experience.

Still, even though reduced in numbers, those plants are still there waiting to be rediscovered and enjoyed. Some of the well-known rainforest plants with edible fruits are the native Citrus species - Finger Lime (*Microcitrus australasica*) and Native Orange (*Microcitrus australis*), Currant Tree (*Antidesma dallachyana*), Blue Lilly-Pilly (*Sygium coolminianum*), Native Tamarind (*Diploglottis australis*), the native Persimmon Sea Ebony (*Diospyros ferrea*), the Native Grape (*Tetragium nitens*), Native Plum (*Podocarpus elatus*), the Native Fig or Sandpaper Fig (*Ficus coronata*), Davidson's Plum (*Davidsonia pruriens*), (I have tried the Davidson's Plum myself and it's a beautiful fruit) - the native peanut, Peanut Tree (*Sterculia quadrifida*) and of course the Macadamia Nut (*Macadamia integrifolia*).

So what are the secrets about growing these plants? Well, there are no secrets really! Just give them a sheltered position away from winds, that's the most important requirement. Then enrich the soil with compost and blood and bone, and water well. It's as simple as that!

(Reprinted from the Newsletter of the Society for Growing Australian Plants, NSW Region)

## Modern Wildflowers

In response to enquiries about our cover picture in the December issue, Jenny Slatyer of Modern Wildflowers, has supplied the following information about what made up the Byzantine cone illustrated: the dried Australian wildflowers were:

Miniature everlasting daisies: *Pithocarpa corymbulosa*  
South Australian daisies: *Ixodia achilleoides*  
Silky White Everlastings: *Helipterum splendens*  
Tassle Smoke Bush: *Conospermum crassifolium*  
Bush Smoke Bush: *Conospermum stoechadis*  
and *Stirlingia latifolia* in bud

All the everlasting daisies are easily grown in the home garden, and can be dried successfully if picked in early bud and hung in loose bunches in a dark airy place.

## The Australian Cultivar Registration Authority

The A.C.R.A. is a non-statutory and voluntary organization, representative of various institutions from each State and from the Commonwealth, as well as the Society for Growing Australian Plants and the Australian Nurserymen's Association.

It meets at least once a year at the National Botanic Gardens, Canberra, to discuss Australian plant cultivars that have been put forward for registration; related matters, such as Plant Variety Rights, are also discussed.

The A.C.R.A. is an independent body, recognized by the International Commission for the Nomenclature of Cultivated Plants (ICNCP) and the International Union of Biological Sciences (IUBS) as the Authority on cultivars arising from the Australian flora - except for the genera *Leptospermum* and *Acacia*, and the family *Orchidaceae*, which had previously been allocated to other authorities.

The ICNCP has formulated a set of rules known as the International Code for the Nomenclature of Cultivated Plants, and has produced an application form based on this Code, which must be filled in and signed by the applicant before a cultivar name can be registered.

On receipt of this application form by the A.C.R.A., the plant is given an accession number, assessed as to its value, and entered into a cultivar register. It is then colour-coded according to the R.H.S. Colour Chart, 1966, and the specimen is pressed for retention in a herbarium. A full description of the cultivar is then prepared to include, origin, habit, leaf size, leaf shape and texture, flower colour, size and shape, distinguishing difference from the parent(s) and similar cultivars, and so on.

This description is then sent to the applicant for his approval, and once approved, or amended, the cultivar is then deemed to be registered. The name is then published in the S.G.A.P. journal 'Australian Plants'.

According to the Code of Nomenclature the term 'cultivar' denotes an 'assemblage of cultivated plants which is clearly distinguished by any characters, and when reproduced retains those characters'. A cultivar may be a plant collected from a natural situation if brought into cultivation, but more usually the term refers to plants that have been specially selected because of certain characteristics that are desirable, or to hybrids, either accidental or man-made, that show good horticultural potential. So the word 'cultivar' covers quite a wide range; it can apply to plants which grow true to type from seed, to those propagated by vegetative means, or to hybrids. Essentially, however, a cultivar is a plant, or group of plants, of economic or ornamental importance that have been selected by man.

To January 1982 the A.C.R.A. has registered 111 cultivars arising from the Australian flora, however, it also holds a comprehensive range of herbarium specimens of cultivars that have not been submitted for registration, as well as many old cultivars in existence prior to its formation and not generally grown to-day. It has a card index system of 1022 recorded names.

The important thing to realise is that the Australian flora has the potential to be developed for horticultural use in much the same way as the flora of other countries. There is a need, therefore, to keep comprehensive records on cultivars as they are developed, so that, if there is a need to draw on genetic material for any reason, the records will exist to show where the material can be found. It also means that the use of cultivar names is stabilized and accurate information is available to the nursery trade.

(Adapted from an article in 'Australian Plants', Vol 11, No 91, by Geoff Butler, Registrar, A.C.R.A.)

## Soil acidity and Camellias

Experimental work in the United States has shown that Camellias can be grown in a wide range of pH values if adequate supplies of nutrient elements are available. Camellias grown at the Kinsealy Research Centre in Dublin for two years support the American findings that these plants do not absolutely demand an acid medium.

In the Kinsealy trials two cultivars were grown, 'Golden Spangle', a Williamsii type, and 'Nayasaki', a Japonica hybrid. Four soil mixes were used, ranging from pH 3.9 to pH 7.2. Those grown at pH 5.6 and 6.2 showed the best leaf colour, and there was no sign of iron-induced chlorosis. Although those in the acid mixes grew and flowered better, the most acid mix, pH 3.9, gave poorer results.

These results are only preliminary, since Camellias are very long lived plants. It was also found at Kinsealy that Camellias are very sensitive to excess fertilizers, even of the slow-release type, so that rates half those recommended by the manufacturers as 'low' rates are used on container-grown plants.

## Transplanting container-grown plants

It is generally recommended practice to pull apart the root ball of container-grown plants when planting out. But Dr Francis R. Gouin of the University of Maryland says that it is even better to 'butterfly' the root ball. He advises laying the plant on one side, and cutting straight up through the lower half of the root ball with a spade, thus allowing this part of the root ball to be pulled apart like butterfly wings. This means that, when planted, the lower roots will be nearer the surface than they would be otherwise, which in turn means that fewer feeder roots will be buried too deep for proper functioning, and the plant will have less difficulty in establishing itself. The same procedure can be followed when repotting potbound indoor plants.

## Increasing Plant Hardiness

It may soon be possible to increase the hardiness of a plant with an anti-freeze, much in the same way as car radiators are protected in cold weather.

Dr D.O. Ketchie, of the Tree Fruit Research Station in Wenatchee, U.S.A., has found that the dodecylether of polyethylene glycol acts as an anti-freeze in apples and pears. Applied at the rate of two gallons per acre while leaves are still active in autumn it increases cold hardiness by five degrees in both top and trunk.

The search for chemicals capable of inducing cold hardiness has accelerated in recent years. These include hormones, urea, glucose, ascorbic acid, cysteine, glycerine, ethylene glycol and ethanol. The Agricultural Research Service in U.S.A. has discovered that soaking seeds in a solution of polyethylene glycol protects them against chilling and injury.

The most promising research, however, involves the control of ice nucleating bacteria. These bacteria live on leaf surfaces and act as nuclei around which ice crystals can form. When they are killed or inhibited by bactericides, antibiotics or antagonistic bacteria, plants are protected from frost damage to as low as 25 degrees Fahrenheit. The use of antagonistic bacteria has now been patented by the Wisconsin Alumni Research Foundation of the University of Wisconsin. These bacteria, incidentally, also appear to be an important biological control for diseases such as fire-blight on pears and brown spot on beans. However, the day when they will be generally available is, presumably, still some way in the future.

(from *The Avant Gardener*, Vol 14, No 11; published by Horticultural Data Processors, New York)

## Making leafmould

Every good gardener knows the value of leafmould, as a mulch, a soil improver, and as an ingredient in potting mixes.

Leafmould can be made by piling leaves into a wire mesh enclosure, adding some nitrogenous fertilizer, and wetting the pile frequently. It can also be made in a compost maker, or even in a plastic garbage bag, adding a gallon of water, a shovelful of soil and a pint of lawn fertilizer to each bagful.

Unshredded leaves, however, will take a year to decompose into leafmould. Shredded they will be leafmould in about three months, while for really fast leafmould production shred the leaves, mix in high nitrogen fertilizer, and thoroughly turn the pile every three days or so, keeping it consistently moist. This way you can have good leafmould in about three weeks.

Rover-Scott Bonnar market two compost shredders. An electric model (the 'Muncher') shreds every type of rubbish - leaves, bark, twigs, kitchen refuse, even branches up to 20mm (¾ in) thick. A petrol-driven model, with a 5hp 4-stroke engine, does the same, but being a heavy duty machine will chew up branches up to 38mm (1½ inches) thick. Both shredders have built-in safety devices.

For further information on these compost shredders write or telephone your nearest Rover-Scott Bonnar branch, or write to their head office at 155 Fison Avenue, Eagle Farm, Queensland, 4007.

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## The Home Garden Workshop:-

### Pest & Weed Control Spraying Equipment

By C.L.Wheller

Judging by the number of good stirrup or bucket pumps being almost given away at auction sales or thrown in the tip these days, they must surely be the most unpopular garden sprayers today, yet for efficiency, long life and ease of operation within its designed capacity I have yet to find a better pump for the average home garden at any price, and by today's standards not unduly expensive even when new. At a recent clearing sale I bought a bundle of eight for \$5.00. As most of these were as good as new and the remainder usable for a very small repair cost, I am frequently amazed at the amount of energy being wasted by home gardeners attempting to spray their vegetables, flowers and even trees and shrubs with household atomisers and other inadequate equipment.

Of course bucket pumps can be cumbersome to handle, needing one person to support and operate pump and another to direct the nozzle, but must they be used that way at ground level? Why the makers have not produced a small attachable container holding 3-4 litres I don't quite understand. Although such a pump could be fitted more or less satisfactorily inside any suitable size container by attaching to the inside wall with a couple of saddles as used by plumbers or electricians, the most satisfactory container fitted by the writer is made from a 35mm length of 150mm P.V.C. water pipe sealed at the bottom with a plastic (perspex) disc glued in place with a plastic cement. A protective steel disc below this is held in position with three upright steel bars attached by brass screws to the outside of the container to protect the bottom from damage but may not be essential if care is taken in using. By attaching the pump barrel with brass, copper or plastic saddles - home made if necessary - to avoid the use of steel inside the container and consequent reaction with some chemicals, the problem of handling is overcome as such a unit can be operated at ground level by one person quite easily.

Where the spraying of trees above 3 metres is concerned, the choice of equipment will depend largely on the number and size of trees as well as the elevating equipment available, which, in the home garden should dictate the choice of trees and the pruning system adopted. Like the brass bucket pump, brass (usually lead coated) knapsack sprayers can sometimes be bought at auctions or even scrap metal dealers for a fraction of their present list price of about \$140 and repaired by any handyman for a few dollars in many cases. In fact, the best of the 3 units in the writer's kit cost only \$3 at a 1981 clearing sale and needed only the removal of a very large dent in the container and replacement of hose and harness to make it as good as new, and the second best one costing \$10 at a scrap metal yard needed only new harness, hose and a thorough cleaning.

Other types of hand sprayers such as the 'Unispray' or 'Genspray' are also occasionally sold at auctions at similar prices and are sometimes useful in these situations and certainly better than household atomisers, but where none of these nor other hand operated equipment is adequate then it is likely that expensive and probably new equipment may have to be considered.

## Compost Bins

Around the world various local authorities are taking the initiative in establishing community composting programmes and encouraging home garden composting. This not only recycles useful waste products to productive ends, but also significantly lessens the burden and cost of municipal waste collection services.

Our own Government, regrettably, looks in the opposite direction. It imposes a 20% sales tax on compost bins, while incinerators, which add to environmental pollution rather than reduce it and which produce an end-product of negligible value, attract only 2½% tax. The logic of this differentiation is hard to follow.

But do compost bins, the sort you can buy in a nursery or a hardware store, make good compost? As every good gardener knows, the secret of good compost making is heat plus aeration. Insufficient heat won't kill weed seeds and disease organisms and produces an imperfectly decomposed material; lack of aeration through the heap produces the wrong sort of decomposition and obnoxious smells and harmful organisms.

Various proprietary brands of compost bins or compost makers are on the market. The simplest look rather like an upturned garbage bin that has no bottom but does have a lid; the most sophisticated involve a barrel on a stand that is rotated by hand. They have a capacity that ranges from just under 0.2 cubic metres to about 0.5. They range in price from about \$20 to more than \$120. All are capable of producing a reasonably good composted material, but most take at least twelve weeks to do this. The barrel type, which is rotated on a stand, makes the best compost and makes it in by far the quickest time, about fourteen days as against twelve weeks. It is also the most expensive, it's fairly heavy, takes up a fair amount of space, and to get the best results you need to give it about five turns a day for fourteen days. It also has to be filled to capacity, which means assembling quite a large amount of material.

You can, of course, make your own bin, and if you do this properly it will work just as well. If you want to buy one, it's just a case of how much you want to spend - the most expensive being best.

A barrel-type compost maker, called the Compostumbler, is made by Osborne Metal Industries, 49 Heathcote Road, Moorebank, 2170, and Lennox Street and Cochrane Road, Moorabbin, 3189. Details of local distributors are given below:  
N.S.W.: Queensland and Victoria:-  
Garden Magic Pty Ltd, P.O. Box 104, Engadine, NSW, 2233.  
Western Australia:-  
Osborne Metal Industries Pty Ltd,  
225 Balcatta Rd, Balcatta, W.A. 6021.



## 'Clean' Wastes

Many industrial wastes are by-products of the manufacture of food products, including spent yeast or sludge from beer, digested sewage from poultry processing, waste fibre and treatment plant sludge from some paper manufacturing processes.

These are no more dangerous to humans or to the environment than manures and chemical fertilizers, and are potentially useful. They must be identified and designated so that users can be sure that there is no unacceptable environmental risk from their use. They must also be relatively consistent. Guidelines for time and rate of application need to be developed.

(Source: Research Perspective; North Carolina State University, Winter 1982)

## Solar heated plant propagation houses

The first major solar heating project in the Australian nursery industry was officially opened on 2nd December last by the Western Australian Minister for Fuel and Energy.

The system has been installed at Waldeck Nurseries Pty Ltd production facilities at Wanneroo, Western Australia, and has been designed to reduce fuel consumption in heating their propagation houses by almost 50%. By so doing, the cost of the system, over \$50000, will be recouped in less than six years. It promises to be one of Australia's most economic demonstrations of solar industrial heating.

The project grew out of the recommendations of a local energy consultant, Dr Robert Lawrance, who was retained by Waldeck Nurseries in 1978 to advise on energy conservation measures.

As a result of these recommendations the Solar Energy Research Institute of Western Australia (SERIWA) agreed to find half the funds for the installation plus additional funds for transducers, and to monitor the performance of the system for two years.

The plant propagation houses are similar in concept to conventional greenhouses. They are used to provide new plant cuttings with a warm humid environment to maximise initial growth rates. Soil temperatures of 24 degrees Celsius and the requirement for high humidity create a need for year-round heating. The intention was to reduce the fuel consumption of the existing oil-fired boilers by installing a solar heating system.

This system comprises 223 square metres of Solarfocus ET1 concentrating collectors and a 12 cubic metre storage tank.

The collectors utilise an elastically buckled reflector profile which closely approximates an ideal parabola. The reflector is an aluminised acrylic film laminated onto zincalume steel sheet. It is maintained in its correct shape by an acrylic cover with moulded edges. Metal end plates seal the collector and house support bearings positioned at the reflector focus which allow the reflector to rotate on the absorber pipe.

The collectors are mounted in a single array on the north-facing roof of a potting shed in 29 parallel connected rows, each containing seven collectors in series. These collectors track the sun on a north-south axis inclined at 10 degrees to the horizontal. The tracking power is provided by a 100-watt 12V DC electric motor which is controlled by a time-base electronic sensor with optical feedback which ensures that the collectors maintain their focus at all times. The controller has inbuilt limit switches and daylight sensing which automatically return the collectors to face east at sunset and start them tracking at sunrise the next morning.

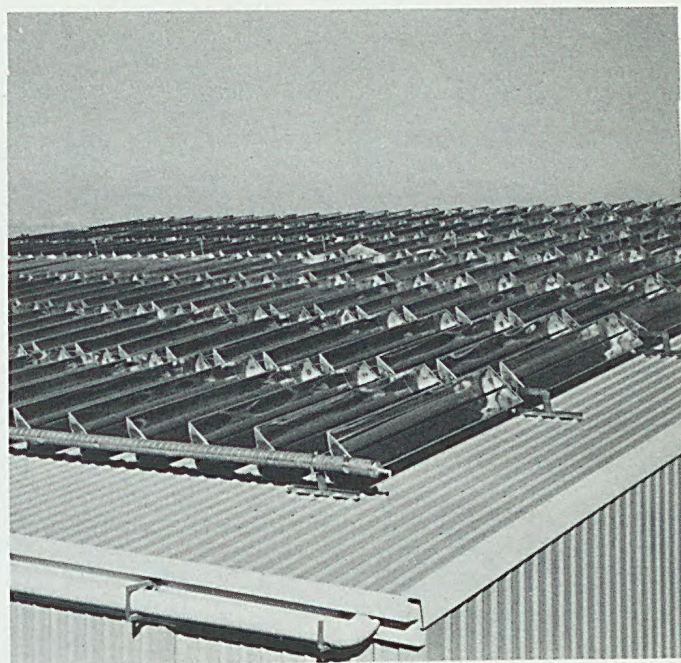
The collectors provide heated water to the storage tank whenever there is a potential net gain as determined by a differential thermostat. The tank is connected in parallel with an oil-fired boiler and provides hot water as required to the propagation beds whenever the tank temperature exceeds 50 degrees Celsius.

The partners in this joint venture are:

Waldeck Nurseries Pty Ltd: a major grower and retailer of nursery stock in Western Australia. The production nursery covers over 17 hectares and supplies their own six retail centres as well as chain and department stores, garden centres and plant shops.

Solarfocus: a private company formed in 1981 by researchers at the University of Western Australia in conjunction with a Perth businessman, to manufacture and market the ET1 linear focus solar concentrating collector.

SERIWA: a statutory body established in 1977 to promote and encourage the use of renewable energy. It receives funds from Federal, State and private sources, and so far has supported over 60 research and demonstration projects.



THE SOLAR COLLECTORS ON THE ROOF OF THE SHED

## Energy budget of a lawn

On a 110 square metre lawn in California grass cuttings and litter removed by mowing and raking equalled, in one year, 3.3kg of nitrogen, 0.96kg of phosphorus and 1.85kg of potassium. To maintain the lawn in a healthy state took 14.5kg of fertilizer, equal to 1.72kg of nitrogen, 0.43kg of phosphorus and 0.86kg of potassium. Therefore there was a net deficiency of nutrients.

This same lawn took 1865 calories per square metre per year in the form of labour, petrol, fertilizer and irrigation; this compares with 715 calories per square metre per year required to grow an equivalent area of maize.

On economic grounds, therefore, the energy budget of a lawn makes no sense - especially as no crop of any sort is harvested from it.

(Source: Jennifer Owen; *Journal of the Royal Horticultural Society*, September 1982)

NOTE: one Colorado city, faced with dwindling water supplies, recently passed an ordinance restricting the percentage of residential landscaping area which home-owners may establish with Kentucky bluegrass lawn.

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## Roots in Sewer pipes

A new chemical treatment which prevents roots entering sewer pipes for several years is now being used in Melbourne. Called Vaporooter, the treatment involves injecting a chemical foam into the pipeline. This foam kills and inhibits the growth of plant roots but does not harm the trees and shrubs. It kills roots entering cracks and joints of the pipes, thus ensuring root-free sewers and retarding growth for a number of years. The foam is applied through a hose which enters the pipe via a manhole or inspection opening. A special mobile machine generates the foam.

Vaporooter is marketed and applied in Australia under licence by Monier. It was developed in the United States and has been used in Melbourne by the MMBW, the Geelong Sewerage Authority and other local authorities.

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## Pasteurizing Potting Soil

The solar pasteurization of potting soil, developed in Israel, is now becoming standard practice in nurseries and gardens in many countries. It is suggested that the potting soil be put in cans and placed in a cold-frame sized plastic structure, or even under a clear plastic cloche. On sunny days, during two week test period, soil temperatures reached an average maximum of 121 degrees, and the temperature each sunny day stayed over 110 degrees for an average of 6.3 hours. This was sufficient to render it almost completely free of insects, weed seeds and disease organisms to a depth of 30 to 45 cm.

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## Bacillus thuringiensis

A purchased supply of *Bacillus thuringiensis* can be extended - theoretically - by culturing it in milk, according to Dr Dale K. Pollett, of Louisiana state University. Collect a handful of susceptible pests which have been sprayed with B.T. when they are nearly dead but not dried up. Mash them and add a pint of milk at room temperature. Let this culture stand for three days; strain it and mix with water to make one gallon. This will be as effective as the original spray.

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## AREA Projects and Expeditions

AREA is the Association for Research Exploration and Aid. Its projects for 1982/83 concentrate on the development of National Parks and conservation programmes in the Phillipines. During the first half of 1982 AREA successfully proposed two new National Parks in that country and proposed amendments to the St. Paul's National Park in Palawan. A coastal survey of Palawan has been undertaken that will lead to the proposal of further reserves. In addition a National Park management plan has been proposed for Leyte.

The following are brief details of some of the expeditions planned for 1983:

Leyte Mountains National Park: exploration and recreation survey: *departs 1st April (29 days)*

Northern Provinces of Luzon; research expedition *departs 15th April (29 days)*

Expedition to Seram, in the central Moluccas region of Indonesia *departs 18th September (32 days)*

Leyte, Mount Apo, Mount Kinabalu; non-research expedition *departs 27th April (28 days)*

Interior of Borneo; non-research expedition *departs 27th August (25 days)*

Further details are available from:

AREA, 363A Pitt Street, Sydney, 2000.

Telephone (02) 264-7788

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## More about Growth regulators

From England; injections of gibberellins into tulip bulbs replace part of the cold requirement; they cause faster flowering, have little effect on stem length. Bulbs were pre-cooled then injected with GA 3 and GA 7.

From Italy; when freesia corms were dipped in gibberellins flowering was advanced by up to 28 days. All treatments induced moderate stem shortening.

From Japan; *Narcissus Soleil d'or* was forced under plastic without heating but treated with smoke - by burning wood and fresh leaves for several hours on each of four consecutive days. This resulted in a high flowering percentage, even with quite small bulbs. It appears that the active constituent in smoke is ethylene.

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# *garden cuttings*

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